

Schreiber, David

From: Ramirez, Delia
Sent: Friday, April 29, 2005 3:59 PM
To: Schreiber, David
Subject: case 09/371347

Hi,

I would like to request the following alignments:

- 1. SEQ ID NO:2 against SEQ ID NO:25, 52-61.
- 2. SEQ ID NO:1 against SEQ ID NO:25, 52-61
- 3. SEQ ID NO:41 against SEQ ID NO:25, 52-61
- 4. SEQ ID NO:43 against SEQ ID NO:25, 52-61
- 5. SEQ ID NO:45 against SEQ ID NO:25, 52-61
- 6. SEQ ID NO:47 against SEQ ID NO:25, 52-61
- 7. SEQ ID NO:2 against SEQ ID NO:1, 41, 43, 45, 47

Thank you,

Delia M. Ramirez, Ph.D.
Patent Examiner
Recombinant Enzymes-Art Unit 1652
USPTO
400 Dulany Street, Remsen Bldg., 2D74, Mail room 2C70
Alexandria, VA 22314
(571) 272-0938
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GenCore version 5.1.6
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OM nucleic - protein search, using frame_n2p model

Run on: May 9, 2005, 15:32:35 ; Search time 5.5 Seconds
(without alignments)
4.589 Million cell updates/sec

Title: us-09-371-347a-45
Perfect score: 3764
Sequence: 1 atgagagaggtctctgcttact.....ctcagatattgctcataa 2094

Scoring table: BIOSUM62
Xgapop 10.0 , Xgapext 0.5
Ygapop 10.0 , Ygapext 0.5
Fgapop 6.0 , Fgapext 7.0
Delop 6.0 , Delext 7.0

Searched: 34 seqs, 6026 residues
Total number of hits satisfying chosen parameters: 68

Minimum DB seq length: 0
Maximum DB seq length: 200000000

Post-processing: Minimum Match 0%
Maximum Match 100%
Listing first 45 summaries

Command line parameters:
-MODEL=framed_n2p_model -DEV=soft -Q=us-09-371-347a-45 -DB=US09371347A.pep
-SUFFIX=ptc -OUT=align45 -MINMATCH=0.1 -LOOPEL=0 -LOOPEXT=0 -UNIT=bits
-START=1 -END=1 -MATRIX=blomsum62 -TRANS=human40.cdi -LIST=45 -DOCALIGN=200
-THR SCORE=ptc -THR MAX=100 -THR MIN=0 -ALIGN=45 -MODE=LOCAL -OUTFMT=ptc
-NORM=ext -HEADSIZE=500 -MINLEN=0 -MAXLEN=200000000 -NCPU=6 -NO_XLPHY
-NEG SCORES=0 -LONGLOG -THRADS=1 -XGAPOP=10 -XGAPEXT=0.5 -FGAPOP=6 -FGAPEXT=7
-YGAPOP=10 -YGAPEXT=0.5 -DELOP=6 -DELEXT=7

Database : US09371347A.pep:*

Pred. No. is the number of results predicted by chance to have a
score greater than or equal to the score of the result being printed,
and is derived by analysis of the total score distribution.

SUMMARIES

Result No.	Score	Query Match	Length	ID	Description
1	3620	96.2	697	1	US-09-371-347A-46 Sequence 46, Appl
2	3609.5	95.9	698	1	US-09-371-347A-2 Sequence 2, Appl
3	3609.5	95.9	698	1	US-09-371-347A-21 Sequence 21, Appl
4	3605.5	95.8	698	1	US-09-371-347A-42 Sequence 42, Appl
5	3599.5	95.6	698	1	US-09-371-347A-44 Sequence 44, Appl
6	3461.5	92.0	689	1	US-09-371-347A-48 Sequence 48, Appl
7	914.5	24.3	682	1	US-09-371-347A-22 Sequence 22, Appl
8	722	19.2	677	1	US-09-371-347A-23 Sequence 23, Appl
9	215	5.7	41	1	US-09-371-347A-60 Sequence 60, Appl
10	158	4.2	29	1	US-09-371-347A-54 Sequence 54, Appl
11	117	3.1	22	1	US-09-371-347A-58 Sequence 58, Appl
12	116	3.1	23	1	US-09-371-347A-53 Sequence 53, Appl
13	104	2.8	19	1	US-09-371-347A-55 Sequence 55, Appl
14	100	2.7	20	1	US-09-371-347A-52 Sequence 52, Appl
15	94.5	2.5	18	1	US-09-371-347A-25 Sequence 25, Appl
16	87	2.3	17	1	US-09-371-347A-57 Sequence 57, Appl
17	68	1.8	14	1	US-09-371-347A-56 Sequence 56, Appl
18	61.5	1.7	682	1	US-09-371-347A-22 Sequence 22, Appl
19	53	1.4	18	1	US-09-371-347A-30 Sequence 30, Appl
20	52	1.4	18	1	US-09-371-347A-26 Sequence 26, Appl
21	52	1.4	18	1	US-09-371-347A-29 Sequence 29, Appl

22	51	1.4	9	1	US-09-371-347A-61 Sequence 61, Appl
23	51	1.4	18	1	US-09-371-347A-35 Sequence 35, Appl
24	50	1.3	18	1	US-09-371-347A-34 Sequence 34, Appl
25	50	1.3	689	1	US-09-371-347A-48 Sequence 48, Appl
26	49.5	1.3	697	1	US-09-371-347A-46 Sequence 46, Appl
27	49.5	1.3	698	1	US-09-371-347A-2 Sequence 2, Appl
28	49.5	1.3	698	1	US-09-371-347A-42 Sequence 42, Appl
29	49.5	1.3	698	1	US-09-371-347A-42 Sequence 42, Appl
30	49.5	1.3	698	1	US-09-371-347A-44 Sequence 44, Appl
31	49	1.3	677	1	US-09-371-347A-23 Sequence 23, Appl
32	48	1.3	18	1	US-09-371-347A-28 Sequence 28, Appl
33	44	1.2	18	1	US-09-371-347A-32 Sequence 32, Appl
34	43	1.1	18	1	US-09-371-347A-27 Sequence 27, Appl
35	42.5	1.1	18	1	US-09-371-347A-38 Sequence 38, Appl
36	40	1.1	18	1	US-09-371-347A-37 Sequence 37, Appl
37	36.5	1.0	18	1	US-09-371-347A-36 Sequence 36, Appl
38	36	1.0	18	1	US-09-371-347A-33 Sequence 33, Appl
39	35	0.9	18	1	US-09-371-347A-31 Sequence 31, Appl
40	35	0.9	19	1	US-09-371-347A-55 Sequence 55, Appl
41	30	0.8	18	1	US-09-371-347A-36 Sequence 36, Appl
42	29	0.8	6	1	US-09-371-347A-59 Sequence 59, Appl
43	29	0.8	22	1	US-09-371-347A-58 Sequence 58, Appl
44	28	0.8	17	1	US-09-371-347A-57 Sequence 57, Appl
45	27	0.7	18	1	US-09-371-347A-30 Sequence 30, Appl

ALIGNMENTS

RESULT 1
US-09-371-347A-46
; Sequence 46, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A,
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; TITLE OF INVENTION: DEFECTS, CARDIOVASCULAR DISEASE, AND CANCER
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; CURRENT FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 46
; LENGTH: 697
; TYPE: PRT
; ORGANISM: Homo sapiens
US-09-371-347A-46

Alignment Scores:

Pred. No.: 2.45e-67 Length: 697
Score: 3620.00 Matches: 697
Percent Similarity: 100.00 Consensus: 0
Best Local Similarity: 100.00 Mismatches: 0
Query Match: 96.17% Indels: 0
DB: 1 Gaps: 0

us-09-371-347a-45 (1-2094) x us-09-371-347a-46 (1-697)

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Db	1	MetcargatgPhenouleuleuYrAlaThrglncinglYglnAlaIeAlaIglu	20
Qy	61	GAATGCTGAGCAGCTGTGCTACATGATTTTCAGATCTTCACCTGTATTAGTAA	120
Db	21	GluwetCysglcInalIaIvalIahIeglyPheserIaIaspreuIaIscYsIleSerIu	40

QY	121	CCCCAATGATGATGACCTTAAAAACGAAACAGTCCCTCTGTTGGTGTGGTTCTTCAACG	180
Db	41	SersapLysrTyraSPLeuysThrguIntraLaProLeuValValValSerThrThr	60
QY	181	GGCACCCGAGACCCACCCGACACAGCCCGCAAGTTGGTTAAAGAAATACAGAACCAACA	240
Db	61	GlyThrInGlyAspProFaspThrInLaArgLysPheValLysGluIleGlnInGlnThr	80
QY	241	CTGCGCGATTGATTTCTTTGCTCACTCGCGGATVGGGTTACTGGGTCCTCGGTATTCAGAA	300
Db	81	LeuProValAspPhePheLeuIahIsleuArgTyrgLysLeuEngLysLeuLysPserGlu	100
QY	301	TACACCTACTTTTGGAAATGGGGGGAAGATTAATTGATTAACGACTTCAAGAGCTTGAAGCC	360
Db	101	TyrThrTyrrPheCysAsnLysLysLysLysLysLysLysLysLysLysLysLysLysLysLys	120
QY	361	CGGCAATTTCTATGACACTGGACATGCAATGCACTGTGTGTTAGAACTTGTGGTGAAG	420
Db	121	ArgHisPheTyraSPThrGlyHisIsaLaaspPheCysValGlyLeuGluLeuValValGlu	140
QY	421	CCGTGGAATGGCGGACTGTGGCCAGCCCTCAAGAAAGATTTTAAAGTCAAGACGAGACACA	480
Db	141	ProTrpIleAlaGlyLeuTrpProAlaLeuArgLysHisPheArgSerSerArgLysGln	160
QY	481	GAGAGATTAAGTGGGCACTCCCGGTGGCATCCGTGATCCCTTGAGACAGACCTGTG	540
Db	161	GluGluIleSerGlyAlaLeuProValAlaSerProAlaSerLeuArgThrAspLeuVal	180
QY	541	AAGTCAGAGCTGCTACACTGGAATCTCAAGTCGAGCTTGGAGATTCAGATTCAGACA	600
Db	181	LysSerGluLeuLeuHisLysLysSerGlnValGluLeuLeuArgPheAspSpsSerGly	200
QY	601	AGAAAGATTCGAGGTTTGAAGCAAAATGACAGTGAACAGCAACCAATCCAACTTGTGA	660
Db	201	ArgLysAspSerGluValLeuLysGlnAsnAlaValAsnSerAsnGlnSerAsnValVal	220
QY	661	ATTGAAAGACTTTGAATCCTCACTTACCCGTTGGTATACCCCACTCTCACAGCCTCTCTG	720
Db	221	ILegLAspPheGlnSerSerLeuThrArgSerValProProLeuSerGlnAlaSerLeu	240
QY	721	AATATTCCTGGTTTACCCCAAGATTAATTTACAGTACATCTGACAGAGTCTTGGCCAG	780
Db	241	AsnIleProGlyLeuProProGluTyrrLeuGlnValHisLeuGlnGlnSerLeuGlyGln	260
QY	781	GAGGAAGCCAAATATCTGTGACTTCAGCAAGATCCAGTTTTCAGATGCCAATTTCAAAG	840
Db	261	GluGlnSerGlnValSerValThrSerAlaAspProValPheGlnValProIleSerLys	280
QY	841	GCAGTCAACTTACTACAGATGATGCCATTAATAACCACTGCTGGTGAATTTGACACTT	900
Db	281	AlaValGlnLeuThrThrAsnAspAlaIleLysThrThrLeuLeuValGluLeuAspIle	300
QY	901	TCAAAATACAGACTTTTCTTATCAGCTGAGAGATGACCTTCAGCGTGATCTGCCTTAACAGT	960
Db	301	SerAsnThrAspPheSerTyrgLlnProGlyAspAlaPheSerValIleCysProAsnSer	320
QY	961	GATTCTGAGGTACAAAGCTTACTCCAAAGACTGCGACTTGAAGATTAATAAGACAGACTGC	1020
Db	321	AspSerGlnValGlnSerLeuLeuGlnArgLeuGlnLeuGlnLysPlyArgGluHisCys	340
QY	1021	GTCCTTTTGAATAATTAAGGACAGACCAAAAGAAAGAGAGACTTATCCCGACATATA	1080
Db	341	ValLeuLeuLysLysLysLysLysLysLysLysLysLysLysLysLysLysLysLysLysLys	360
QY	1081	CTTGGCGGATGTCTCTCOAGTTCAATTTTACCTGTGTCTTTGAATCCGAGCAATTCCT	1140
Db	361	ProAlaGlyCysSerLeuGlnPheIlePheThrTrpCysLeuGluIleArgAlaIlePro	380
QY	1141	AAAAAGGACTTTTTCGAGCCCTTGGAGCTTATACAGTGAACAGTGCAGAAAGGCGAGG	1200
Db	381	LysLysAlaPheLeuArgAlaLeuValAspTyrrThrSerAspSerAlaGluLysArgArg	400
QY	1201	CTACGAGAGCTGTGACGTAAACAAAGGGGACCGCAATTATAGCCGGCTTTGTACGAGATCC	1260

Db	401	LeuGInGluUbuCysSerLysGInGluAlaAlaAspTyrSerArgPheValAlaAspAla	420
QY	1261	TGAGGCTGCTGTTGGATCTCTCCGCTTCCCTTCTTGCCAGCACCACCTAGTCTC	1320
Db	421	CysAlaCysLeuLeuAspLeuLeuLeuAlaPheProSerCysGInProProLeuSerLeu	440
QY	1321	CTGCTCCGAACACTCTTCCCTAACTCAACCCAGACCAATTCGTCGTGAAGTCAAGTTTA	1380
Db	441	LeuLeuGInHisLeuProLysLeuGInProArgProTyrSerCysAlaSerSerLeu	460
QY	1381	TTTGCAACCAGGAAGAGCTCCATTTTGTCTCTCAACCTTGCGAATTCGTCTACTGCCACA	1440
Db	461	PheHisProGlyLysLeuHisArgPheValPheAsnIleValGluPheLeuSerThrAlaThr	480
QY	1441	ACAGAGGTTCTGCGGAAGGAGATATGACAGGCTGGCGCTGTTGGTTGCTTCAGTT	1500
Db	481	ThrGluValLeuAspGlySerGlyValCysThrGlyTyrPheuAlaLeuValAlaSerVal	500
QY	1501	CTTGAGCCAAACATATACATGATGCCCATGAAGAAGACGGGGAAAAGCCCTGGCTCTAAATATA	1560
Db	501	LeuGInProAsnIleHisAlaSerHisGluAspSerGlyLysAlaLeuAlaProLysIle	520
QY	1561	TCGATCTCTCTCGAACAACAATTTCTTCCACTTACCAATGACCCCTCAATCCCATC	1620
Db	521	SerIleSerProArgThrThrAsnSerPheHisLeuProAspAspProSerIleProIle	540
QY	1621	ATAATGGTGGGTCCAGGAACCGGATGACCCCGCTTATTTGGGCTTCACAAACATAGAGAG	1680
Db	541	IleIleValGlyProGlyThrGlyIleAlaProPheIleGlyPheLeuGInHisArgGlu	560
QY	1681	AAACTCCAAAGAACAAACCCAGATGAATTTTGGACCAATGTGGTTTTTGGCTCGAGG	1740
Db	561	LysLeuGInGluGInHisProAspArgLysAspPheGlyAlaMetTrpPhePheGlyCysArg	580
QY	1741	CATAAGATAGGGATTTATTCATTCAGAAAAGCTCGACATTTCCCTTAAGCATGGGATC	1800
Db	581	HisLysAspArgAspTyrLeuPheArgLysGluLeuArgHisPheLeuLysHisGlyIle	600
QY	1801	TTAATCATCTAAAGGTTTCCCTTCTCAAGATGCTCTGTGGGAGAGGAAGCCCCA	1860
Db	601	LeuThrHisLeuLeuLysValSerPheSerArgAspAlaProValGlyGluGluAlaPro	620
QY	1861	GCAAGATATGTATCAAGACACACATCCAGCTTCATGGCCAGCAGGTGGGAGAAATCTCTCTC	1920
Db	621	AlaLysTyrValGlnAspAsnIleGlnLeuHisGlyGlnGlnValAlaArgIleLeuLeu	640
QY	1921	CAGAGGAACGGCCATTTATTTGTGTGTGGAGATCCAAAGAATATAGGCCCAAGATGTACAT	1980
Db	641	GlnGlnAsnGlnHisIleTyrValCysGlyLysAspAlaLysAsnMetAlaLysPheValHis	660
QY	1981	GATGCCCTTGTGCAATATATAGCAAAAGAGGTGGAGTTGAAAAACTAGAAAGCAATGAAA	2040
Db	661	AspAlaLeuValGlnIleIleSerLysGluValGlyValGluLysLeuGlnAlaMetLys	680
QY	2041	ACCGTGGCCACTTAAAGAAGAAAAGCGTACTCTTGAGATATTTGGTCA	2091
Db	681	ThrLeuAlaThrLeuLysGluGlnLysArgTyrLeuGlnAspIleTrpSer	697
RESULT 2			
US-09-371-347A-2			
Sequence 2, Application US/09371347A			
GENERAL INFORMATION:			
APPLICANT: Gravel, Roy A.			
APPLICANT: Rozen, Rima			
APPLICANT: Leclerc, Daniel			
APPLICANT: Wilson, Aaron			
APPLICANT: Rosenblatt, David			
TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:			
TITLE OF INVENTION: CLONING AND METHODS FOR EVALUATING RISK OF NEURAL TUBE			
TITLE OF INVENTION: DEFECTS, CARDIOVASCULAR DISEASE, AND CANCER			
FILE REFERENCE: 50004/003003			
CURRENT APPLICATION NUMBER: US/09/371.347A			


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QY 1858 CCAGCAAGTATGTACAGACAACATCCAGCTTCATGGCCAGCAGGTGGCGAATCTCTC 1917
Db 621 ProhalysTyrrvaGlnaspahmilleGlnuuhisglYnglnlnValAlaArgIleu 640
QY 1918 CTCGAGGAAGCGCCATATTATTATGTGTGTGAGATGCAAGAAATATATGGCCAGATGTA 1977
Db 641 LeuGlnGlnuamGlnYhisIleTyrrValCysglYaspaIalysAsnMetAlalysAspVal 660
QY 1978 CATGATGCCCTTGTGCAAAATATATAAGCAAGAGGTGGAGTTGAAAATCTAGAGCATG 2037
Db 661 HispaIaleuValGlnIleIleSerYsglnValGlyValGlnYlsLeuGlnIlaMet 680
QY 2038 AAAACCCCTGGCCACTTTTAAAGAGAAAAGCCTTACCTTCAGATATTGGTCA 2091
Db 681 LysThrIleuAlaThrIleuYsglnGlnYlsArgTyrrIleuGlnAspIleTrpSer 698

RESULT 3
US-09-371-347A-21
; Sequence 21, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A.
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE.
; TITLE OF INVENTION: CLONING AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; FILE OF INVENTION: DEFECTS CARDIOVASCULAR DISEASE, AND CANCER
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; CURRENT FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq For Windows Version 4.0
; SEQ ID NO 21
; LENGTH: 698
; TYPE: PRF
; ORGANISM: Homo sapiens
US-09-371-347A-21

Alignment Scores:
Pred. No.: 3,87e-67 Length: 698
Score: 3609.50 Matches: 697
Percent Similarity: 99.86% Conservative: 0
Best Local Similarity: 99.86% Mismatches: 0
Query Match: 95.90% Indels: 1
Gaps: 1

us-09-371-347A-45 (1-2094) x US-09-371-347A-21 (1-698)
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Db 1 MetArgTrgPheLeuLeuLeuTyrrAlaThrGlnGlnIlyGlnAlaYsaIleAlaGln 20
QY 61 GAAATGTGTAGCAAGCTGTGTATCATGATTTTCTGCAGATCTTCACTGATTAAGTAA 120
Db 21 GlnMetCysGlnGlnAlaIleValHisGlyPheSerAlaAspLeuHisCysIleSerGln 40
QY 121 TCCGATAGTATGACTTAAACCGAAACAGCTCTCTGTGTGTGTGTGTGTGTCTACACAG 180
Db 41 SerAspYsTyrrAspLeuYsThrGlnThrAlaProIleuValValValIleSerThrThr 60
QY 181 GGCAACCGGAGAACCCCGACACACAGCCCGCAAGTTTGTTAAGAAATACGAACCAACA 240
Db 61 GlyThrGlyAspProAspTrpThrAlaArgYlsPheValYlsGlnIleGlnAsnGlnThr 80
QY 241 CTCGCGGTGATTTCTTGTCTCACTGCGGTATGGGTATCGGGTCTCGGTGATTCAGAA 300
Db 81 LeuProValAspPhePheAlaHisIleuArgTyrrGlyLeuLeuGlnYlsAspSerGln 100
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Db 101 TyrrThrTyrrPheCysAsnGlyGlyYlsIleIleAspYsArgLeuGlnIleuGlyAla 120
QY 361 CGGCAATTCTATGACACTGTGACATGACATGACTGTGTAGATTGAACTGTGTGTGAG 420
Db 121 ArgHisPheTyrrAspTrpThrGlnHisAlaIleAspAspCysValGlyLeuGlnIleuValGln 140
QY 421 CCGTGATTTGTGTGACTCTGTGGCCAGCCCTCAGAAAGCATTTTGTAGCTAACGACGACAA 480
Db 141 ProThrIleAlaGlyLeuTrpProAlaIleuArgYsHisPheArgSerSerArgGlyGln 160
QY 481 GAGGAGATTAAGTGGCGCACTCCGCTGGCATCACTCTCATCTTGTAGAGACAGACTTGTG 540
Db 161 GlnGlnIleSerGlyAlaIleuProValAlaSerProAlaSerLeuArgThrAspLeuVal 180
QY 541 AAGTCAGAGCTGTACACATTTGAATCTCAAGTCGAGCTTGTGATTCGATTCAGAGA 600
Db 181 LysSerGlnIleuLeuHisIleGlnSerGlnValGlnIleuLeuArgPheAspAspSerGly 200
QY 601 AGAAAGATTTCTGAGGTTTGAAGCAAAATGCACTGAACGACAAACCAATCCATGTGTGA 660
Db 201 ArgYlsAspSerGlnValIleuYsglnAsnAlaValAsnSerAsnGlnSerAsnValVal 220
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Db 221 IleGlnAspPheGlnIleSerIleuThrArgSerValProProLeuSerGlnAlaSerLeu 240
QY 721 AATATTCCTGTGTTACCCCGCAAAATTTACAGTACATCTGACAGAGTCTCTTGGCCAG 780
Db 241 AsnIleProGlyLeuProProGlnTyrrLeuGlnValHisIleuGlnIleuSerLeuGln 260
QY 781 GAGGAAGCAAGATCTGTGACTTCAAGCAAGATCTTTCAGTCCATTTGAGCCAAATTCAG 840
Db 261 GlnGlnSerGlnAlaSerValThrSerAlaAspProValPheGlnValProIleSerYls 280
QY 841 GCAGTTCACTTACTACGATGATGCAATGATGCAATGCAATGCAATGCAATGCAATGCAAT 900
Db 281 AlaValGlnIleuThrThrAsnAspAlaIleTyrrThrIleuLeuValGlnIleuAspIle 300
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Db 301 SerAsnThrAspPheSerTyrrGlnProGlyAspAlaPheSerValIleCysProAsnSer 320
QY 961 GATTCTGAGGTAAAGGCTCTCAAGCTCAAGCTGACCTTGAAGATTAAGAGAGCACTGC 1020
Db 321 AspSerGlnValGlnSerIleuLeuGlnArgLeuGlnIleuGlnAspYsArgGlnHisCys 340
QY 1021 GTCCCTTTGAAAATTAAGGAGACACAAAGAGAAAGAGACTTACCTTACCCAGCATATA 1080
Db 341 ValIleuLeuYsIleYlsAlaIlePThrYlsYlsGlyAlaIleThrIleuProGlnHisIle 360
QY 1081 CCTGGCGGATGTCTCTCCAGTTCAATTTTACTGTGTCTTGAATTCGAGGAAATTTCT 1140
Db 361 ProIleGlyCysSerIleuGlnPheIleThrTyrrCysIleuGlnIleArgAlaIlePro 380
QY 1141 AAAAAGCAATTTTGGAGCCCTGTGCACTATACAGAGACAGTCTGAAAAAGCCAGG 1200
Db 381 YlsYlsAlaPheLeuArgAlaIleuValAspTyrrThrSerAspSerAlaGlnYlsAspArg 400
QY 1201 CTACAGAGCTGTGCAGTAAACAGGGGAGCCGATTAATAGCCGCTTGTAGCAGATGCC 1260
Db 401 LeuGlnIleuLeuYsSerYsGlnIlyAlaIleAspTyrrSerArgPheValArgAspAla 420
QY 1261 TGTGCTGCTGTGTGATCTCTCTCGCTTTCCTTCTTTCGACGACCACTCACTGCTC 1320
Db 421 CysAlaCysLeuLeuAspPheLeuLeuAlaPheProSerCysGlnProProLeuSerLeu 440
QY 1321 CTGCTGCAACATTTCTTAACTTCAACCCAGACCATATTCGAGTCAAGCTCAACTTAA 1380
Db 441 LeuIleuGlnHisIleuProYlsLeuGlnProArgProTyrrSerCysAlaIleSerSerLeu 460
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QY 1381 TTTCACCGAGGAAGCTCCATTTTGTCTTCAACATTTGGAATTTGTCTACTGCCACA 1440
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Db 461 PhehlsprogllylsleuhsiphevalPheahnllevalglupheuseThrlathr 480
QY 1441 ACAGAGTTCTGCGGAGGAGATATGACAGGCTGGCTGGCTTTGTTGCTTCACTT 1500
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Db 481 ThrghuvalleuarglyvalCythrghlyTrpleuAlaleuValAlaserVal 500
QY 1501 CTTGAGCCCAACATPACATGATCCCATGAGACAGCGGGAAAGCCCTGGCTCTTAAGTA 1560
    |||||
Db 501 LeuglnProvalenllehsialaserhsiglupsergilyvalAlaleuAlaProlysle 520
QY 1561 TCACATCTCTCCGCAACAACAAATCTTCCACTTACAGATGACCCCTCAATCCCAATC 1620
    |||||
Db 521 SerlleseerProahgThThrsanserPhehlsleuproahpserProserlleProile 540
QY 1621 ATAAATGTGGTCCAGAAACCGGATAGCCCCGTTTATGAGTTTCTTCAACATGAGAG 1680
    |||||
Db 541 llemevalglYProglYThrclylleAlaProPheilleglYPheleuglnhsargly 560
QY 1681 AAATCCCAAGAACACACCCAGATGGAATTTGAGCAATGTGG---TTTTGGCTGC 1737
    |||||
Db 561 LysleuglnGlunhlsproahpalyasnPheglYAlamecTrpleuPhehleglyCys 580
QY 1738 AGGCAATAAGATAGGATTTATCTATTCTAGAAAAGAGCTCAGACATTTCTTACGATGG 1797
    |||||
Db 581 ArghslyshaspharghsPTrleuPhearghslylsuleuarghsPheleuhsly 600
QY 1798 ATCTTAATCTCATTAAGAGTTTCTTCTCAAGAGATGCTCTGTTGGGAGAGGAGACC 1857
    |||||
Db 601 lleleuthrhlsleuLyvalserPheSerahpAlaProvalglYglunhla 620
QY 1858 CCAGCAAGATATGTCACAGACACATCCAGCTTTCAGGCCACGAGTGGCCAGATCTCTC 1917
    |||||
Db 621 ProAlaYsTrYvalGlunshpasmllleglnleuhsiglYglunhlaAlaarglleu 640
QY 1918 CTCAGAGAGACGGCCATATTATGTTATGTGTGAGATGCAAGATATGAGCCAGATGTA 1977
    |||||
Db 641 LeuglnleuarghslyhsilleYvalCyseglYshpAlalyshameChAlalyshpAl 660
QY 1978 CATGATGCTTGTGCAATATATAGCAAGAGGTTGAGTTGAAAATCTAGAACATG 2037
    |||||
Db 661 HlsphAlaleuValglnllelleserlysgluValglYvalglulYleuglnhlaMet 680
QY 2038 AAAACCTGGCCACTTTAAAGAGAAAAGCTTACCTTCAGATATTTGTCTCA 2091
    |||||
Db 681 LysThrlleuAlaTrhlleuLysglnulYsharglyTrleuGlunshpilleTrpser 698

RESULT 4
US-09-371-347A-42
: Sequence 42, Application US/09371347A
: GENERAL INFORMATION:
: APPLICANT: Gravel, Roy A,
: APPLICANT: Rozen, Rima
: APPLICANT: Leclerc, Daniel
: APPLICANT: Wilson, Aaron
: APPLICANT: Rosenblatt, David
: TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
: TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
: TITLE OF INVENTION: DEFECTS, CARDIOVASCULAR DISEASE, AND CANCER
: FILE REFERENCE: 50004/003003
: CURRENT APPLICATION NUMBER: US/09/371,347A
: CURRENT FILING DATE: 1999-08-10
: PRIOR APPLICATION NUMBER: 09/232,028
: PRIOR FILING DATE: 1999-01-15
: PRIOR APPLICATION NUMBER: 60/071,622
: PRIOR FILING DATE: 1998-01-16
: NUMBER OF SEQ ID NOS: 61
: SOFTWARE: FastSeq for Windows Version 4.0
: SEQ ID NO 42
: LENGTH: 698
: TYPE: PRT
: ORGANISM: Homo sapiens
```

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US-09-371-347A-42
Alignment Scores:
Pred. No.: 4.6e-67 Length: 698
Score: 3605.50 Matches: 696
Percent Similarity: 99.86% Conservative: 1
Best Local Similarity: 99.71% Mismatches: 0
Query Match: 95.79% Indels: 1
DB: 1 Gaps: 1

us-09-371-347a-45 (1-2094) x US-09-371-347A-42 (1-698)
QY 1 ATGAGAGAGTTCTGTTACTATATGCTACAGAGAGGAGGAGAAAGCCATCCAGAA 60
    |||||
Db 1 MetahargpHeuLeuLeuLeuYrhlathrclnlnnglnAlalyAlallelelu 20
QY 61 GAAATGTGTGACAACTGTGGTACATGATTTTCTGCAATCTTCACTGTATTATGAA 120
    |||||
Db 21 GlullecYsglunhAlaValAlhls6lyPheSerAlaSerLeuhsCysilleserglu 40
QY 121 TCCGATAGTATGACCTTAAACCGAAACAGCTCTCTGTTGTTGGTTTCTTACACAG 180
    |||||
Db 41 SerasplysTrYasPleuLystrghlnhAlaProleuValValValaserThrlThr 60
QY 181 GGCAACCGAGACCCAGCCGACACAGAGCCGCAAGTTTGTTAAGAAATACAGAACCAACA 240
    |||||
Db 61 GlyhrglsyapProProahpThrlAlarghsPheVallysglulleglunhnglnThr 80
QY 241 CTGCGGTTGATTTCTTGTCTACCTGGGATAGGGTTTACTGGGTTCTCGTGATTCAGAA 300
    |||||
Db 81 LeuProvalaerPhePheAlahlsleuarglyrclyleuLeuglyAspserglu 100
QY 301 TACACCTACTTTTTCATAGGGGGGAGATATATTAAGACATTCAGAGCTTGGAGACC 360
    |||||
Db 101 TyrThrlYrPheCysasnglyglYsllleleasplysaglyleuglnleuVala 120
QY 361 CGGCAATTTCTATGACACTGACATGACATGACATGATCTGTGAGGTTTAAACTTGTGGT 420
    |||||
Db 121 ArghsPheTrYasPTrhlghlsAlaAspshpCysValglyleuglnleuValglu 140
QY 421 CCGTGATTTGTGACCTTGGCCAGCCCTCAGAAAGCATTTTAAAGTCAAGAGAGACAA 480
    |||||
Db 141 ProTrpleAlaaglyleuTrpProAlaleuarglyshlsPheargserSerarglyln 160
QY 481 GAGAGATTAATGGCGGCACTCCCGGTGGCATCACTCGATCCTTGAAGACAGACCTTGTG 540
    |||||
Db 161 GlunhlseserglyAlaleuProvalAlaserProAlaserLeuarglyThraspleuVal 180
QY 541 AAGTCAGAGCTGTACACATTTGAATCTCAAGTTCAGATTCAGATTCAGATTCAGAGA 600
    |||||
Db 181 LyssergluleuLeuhsillegluserglunhAlaGluleuLeuarghsPheAspsergly 200
QY 601 AGAAAGATTTGTGAGTTTGAACCAAAATGACAGTGAACAGCAACCAATCCAAATGTGTA 660
    |||||
Db 201 ArglyshasPsergluValleuLyglunshAlaValaAsenserAanglnSerAsnVala 220
QY 661 ATTGAAGCTTTGAGTCTCTACCTTACCCGTTCCGATCCCCCACTCTCAAGCCCTCTGTG 720
    |||||
Db 221 lleglunshpPhegluserSerleuThrArgserValProProleuSerGlunhlsSerleu 240
QY 721 AATATTCCTGTTTACCCCGAATATTTATGAGTATCATGACAGAGTCTTGTGGCCAG 780
    |||||
Db 241 AsnllleProglYleuProProglulYrleuglnhAlhsleuglnlnuserleuclYglu 260
QY 781 GAGGAAAGCCAAATATCTGTGACTTCAGACAGATCCAGTTTTCAGTGCCAAATTTCAAAG 840
    |||||
Db 261 GlunhuserglunhlservalThserAlaAspProvalPheglunhAlProilleserlys 280
QY 841 GCAGTTCACTTACTATGAGATGAGATGCCATTAACCACTGCTGCTGATGATTTGACATT 900
    |||||
Db 281 AlaleValglunleuthrThrasnshpAlalleYstrThrlleuLeuValglunleuAspille 300
QY 901 TCAATATACAGACTTTCTTATCAGCCCTGAGAGATGCTTCAAGCGTGATCTGCCCTTAACAGT 960
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Db 301 SeranThrAspSerSerTyGlnProGlyAspAlaPheSerValIleCyProAsnSer 320
Qy 961 GATTCTGAGGTAAACAAGCTCTCCAAAGACTGACGCTGTAAGATTAAGAGACACTGC 1020
Db 321 AsperGluValIleGlnSerLeuGlnIleArgLeuGlnIleGlnAspLysArgGlnHisCys 340
Qy 1021 GTCCCTTGAATAATTAAGGACAGACAAAGAAAGAGACTTACCCACCATATA 1080
Db 341 ValLeuLeuLysIleLeysAlaAspThrLysLysGlyAlaThrLeuProGlnHisIle 360
Qy 1081 CCTGGCGATGTTCTCTCCAGTTCAATTTTACCTGGGTCTTTGAATCCGACAAATTCCT 1140
Db 361 ProIleGlyCysSerLeuGlnPheIlePheThrTrpCysLeuGlnIleArgAlaIlePro 380
Qy 1141 AAAAAGGCAATTTTGGCGACCTTGTGATCATATACAGTGACAGTCCGGAAGACGACG 1200
Db 381 LysLysAlaPheLeuAlaGalaLeuValAspTyThrSerAspSerAlaGlnLysArgArg 400
Qy 1201 CTACAGAGCTGTGCAGTAAACAAGGGGACCCGATTAAGCCGCTTTGTACGAGATGCC 1260
Db 401 LeuGlnGluLeuCySerSerLysGlnGlyAlaIleAspTySerSerArgPheValArgAspAla 420
Qy 1261 TGTGCTGCTGCTTGTGGATCTCTCTGCTGCTTCCCTTCTTCCGACCACTCAATCTC 1320
Db 421 CysAlaCysLeuLeuAspLeuLeuLeuAlaPheProSerCysGlnProProLeuSerLeu 440
Qy 1321 CTGCTCGAACAATCTTCTTAACTTCAACCCGACCATATTTGGTGGAGAGTCAAGTTTA 1380
Db 441 LeuLeuGlnLysLeuProLysLeuGlnIleProLysProLysSerCysAlaSerSerLeu 460
Qy 1381 TTTCACCCAGAGAAAGCTCCATTTTGTCTTCAACATTTGGAATTTGTCTTACTGCCACA 1440
Db 461 PheHisProGlyLysLeuHisPheValPheAsnIleValGlnPheLeuSerThrAlaThr 480
Qy 1441 ACAGAGGTTCTGCGGAGGAGGTATGTACAGGCTGCGCTGCTTGTGGTCTTCAAGTT 1500
Db 481 ThrIleValLeuAlaGlyLysGlyValCysThrGlyTyThrLeuAlaLeuValAlaSerVal 500
Qy 1501 CTTTCAGCAACAATCATATGATGATCCCATGAGAAGACGCGGAAAGCCCTGAGCTTAAGATA 1560
Db 501 LeuGlnProAsnIleHisAlaSerHisGlnAspSerGlyLysAlaLeuAlaProLysIle 520
Qy 1561 TTCACTCTCTCTGCAACAACAATTTCTTCCATTTACCAATGACCCCTCAATCCCATC 1620
Db 521 SerIleSerProArgThrThrAsnSerPheHisLeuProAspProSerIleProIle 540
Qy 1621 ATATATGATGGGTCCAGGAACCGGATAGCCCGTTTATTTGGGTTCTTCAACAATAGAGAG 1680
Db 541 IleMetValGlyProGlyThrGlyIleAlaIleProPheIleGlyPheLeuGlnHisArgGlu 560
Qy 1681 AAATCCAGAACAACAACCCAGATGAAATTTTGGACAAATGTGG--TTTTTTGGCTGC 1737
Db 561 LysLeuGlnGlnGlnHisProAspGlyAsnPheGlyAlaMetTrpLeuPhePheGlyCys 580
Qy 1738 AGGATATAGATAGGATTTATCTATTCAAAAAGAGCTCAGACATTTCTTAAAGCATGGG 1797
Db 581 ArgHisLysAspArgAspTyLysLeuPheArgLysGlnLeuAlaArgHisPheLeuLysHisGly 600
Qy 1798 ATCTTAATCATCTTAAAGGTTTCTTCTCAAGAGATCTCTGTGTGGGGAGGAGGAGGCC 1857
Db 601 IleLeuThrHisLeuLysValSerPheSerArgAspAlaProValGlyGlnGlnGlnAla 620
Qy 1858 CCAAGCAAGTATGTACAAGACAACATCCAGCTTCATGCGCAGCAGAGTGGCAGATCTTC 1917
Db 621 ProAlaLysTyLysValGlnAspAsnIleGlnLeuHisGlyGlnGlnValAlaArgIleLeu 640
Qy 1918 CTCACAGAGAAAGCCCATATTATGTGTGTGAGATGCAAAAGATATGGCCAAAGATGTA 1977
Db 641 LeuGlnIleLysGlnGlyHisIleTyLysValCysGlyAspAlaLysAsnMetAlaLysAspVal 660
Qy 1978 CATGATCCCTTGTGCAAAATTAATTAAGCAAAAGAGTTGAGTTGAAAACTAAGCAAGATG 2037
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Db 661 HisAspAlaLeuValGlnIleIleSerLysGlnValGlyValGlnLysLeuGlnAlaMet 680
Qy 2038 AAAACCTGGCCACTTTTAAAGAAAGAAACGCTACCTTGACGATATTGGTCA 2091
Db 681 LysThrLeuAlaThrLeuLysGlnGlnLysArgTyLysLeuGlnAspIleTrpSer 698

RESULT 5
US-09-371-347A-44
: Sequence 44, Application US/09371347A
: GENERAL INFORMATION:
: APPLICANT: Gravel, Roy A.
: APPLICANT: Rozen, Rama
: APPLICANT: Leclerc, Daniel
: APPLICANT: Wilson, Aaron
: APPLICANT: Rosenblatt, David
: TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE;
: TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
: TITLE OF INVENTION: DEFECTS, CARDIOVASCULAR DISEASE, AND CANCER
: FILE REFERENCE: 50004/003003
: CURRENT APPLICATION NUMBER: US/09/371,347A
: PRIOR FILING DATE: 1999-08-10
: PRIOR APPLICATION NUMBER: 09/232,028
: PRIOR FILING DATE: 1999-01-15
: PRIOR APPLICATION NUMBER: 60/071,622
: PRIOR FILING DATE: 1998-01-16
: NUMBER OF SEQ ID NOS: 61
: SOFTWARE: FASTSEQ for Windows Version 4.0
: SEQ ID NO 44
: LENGTH: 698
: TYPE: PRT
: ORGANISM: Homo sapiens
: US-09-371-347A-44

Alignment Scores:
Pred. No.: 5 97e-67 Length: 698
Score: 3599.50 Matches: 696
Percent Similarity: 99.71% Conservative: 0
Best Local Similarity: 99.71% Mismatches: 1
Query Match: 95.63% Indels: 1
DB: 1 Gaps: 1

us-09-371-347A-45 (1-2094) x US-09-371-347A-44 (1-698)
Qy 1 ATGAGAGGTTTGTGTACTATATATGCTTACACAGCAGGACGCAAGCCATCGAGAA 60
Db 1 MetArgArgPheLeuLeuLeuTyAlaThrGlnGlnGlyGlnAlaLysAlaIleAlaGlu 20
Qy 61 GAATATGTCAGCAAGCTGTGTACATGATTTTTCGAGATCTTCACTGATTAAGTGA 120
Db 21 GluMetCysGlnGlnIleAlaValAlaHisGlyPheSerAlaAspLeuHisThrIleSerGlu 40
Qy 121 TCCGATATAGTATGACCTTAAACCAACCAAGCAGTCTCTTGTGTGTGTTCTTACAG 180
Db 41 SerHisPheTyLysPheLeuLysThrGlnThrAlaProLeuValAlaValAlaSerThrThr 60
Qy 181 GGCACCGGAGACCCACCCGACACAGCCCGCAAGTTTGTTAAGAAATACAGAAACA 240
Db 61 GlyThrGlyAspProProAspThrAlaArgLysPheValIleGlnIleGlnAsnGlnThr 80
Qy 241 CTGCGGTTGATTTCTTGTCTACCTGCGGTATAGGTTACTGGGTCTCGGTATTGAGA 300
Db 81 LeuProValAspPhePheAlaHisLeuArgTyGlyLeuLeuGlyLeuGlyAspSerGlu 100
Qy 301 TACACCTACTTTTGGACATGGGGGAGAGATTAATGATTAACGACTTCAAGAGTTGAGCC 360
Db 101 TyThrTyLysPheCysAsnGlyGlyLysIleIleAspLysArgLeuGlnGlnLysAla 120
Qy 361 CGCAGTTTGTATGACACTGACATGCAAGATGACTGTGAGTTTGAACCTTGTGTTGAG 420
Db 121 ArgHisPheTyLysPheThrGlnHisAlaAspCysValGlyLeuGlnLeuValIleGlu 140
Qy 421 CCTGTGATTTGCTGAGACTCTGCGCAGCCCTCAAGAACATTTTAAGTTCACAGCAGAGCA 480
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Db      141  ProTrr1lea1aGlyLeuTrrProAlaLeuArgLysh1sPheArgSerArgGlyGln 160
Qy      481  GAGAGTAAGTAGTGCGGACCTCCGGTGGCATCACCTGATCTTGAGGACAGCACTTGTG 540
Db      161  GlnGlnLysSerGlyAlaLeuProValAlaSerProAlaSerLeuArgThrAspLeuVal 180
Qy      541  AAGTCAGAGCTGTACACATTTGAATCTCAAGTCAGCTTCTGAGATTGATGATTCAGGA 600
Db      181  LysSerGlnLeuLeuHsi1leGlnSerGlnValGlnLeuLeuArgPheAspAspSerGly 200
Qy      601  AGAAAGATTTCTGAGGTTTGTAGAGCAAAATCCAGTGAACAGCAACCAATCCATGTTGA 660
Db      201  ArgLyAspSerGlnValLeuLyGlnAsnAlaValAsnSerAsnGlnSerAsnValVal 220
Qy      661  ATTGAAGACTTGTGCTCTCACTTACCCGTCGCTGACCCCACTCTCAAGCCCTCTGTG 720
Db      221  LLeuLysPheGlnSerLeuThrArgSerValProProLeuSerGlnAlaSerLeu 240
Qy      721  AATATTCCTGGTTTACCCCGAGAAATTTTACAGGTACATCTGACAGAGTCTTGTGGCCAG 780
Db      241  Asn1leProGlyLeuProProGlnTyrLeuGlnValH1sLeuGlnGlnSerLeuGlyGln 260
Qy      781  GAGGAAAGCCCAAGTATCTGTGACTTCAGCAGATCCAGTTTCAAGTCCCAATTTCAAAG 840
Db      261  GlnGlnSerGlnValSerValThrSerAlaAspProValPheGlnValPro1leSerLyS 280
Qy      841  GCAGTTCACTTACTTAGAATGATGCCATAAAACCACTGCTGCTGATGATTTGGACTT 900
Db      281  AlaValGlnLeuThrThrAsnAspAla1leLyThrThrLeuLeuValGlnLeuAsp1le 300
Qy      901  TCAATATCAGACTTTTCTCATCAGCTGAGAGATGCTTCAAGCTGATCTGCTTAAACAGT 960
Db      301  SerAsnThrAspPheSerTyrGlnProGlyAspAlaPheSerVal1leCyProAsnSer 320
Qy      961  GATTCTGAGGTACAAAGCCTTATCTCCAAAGACTGTCAGCTTGAAGTAAAGAGACACTGC 1020
Db      321  AspSerGlnValGlnSerLeuGlnArgLeuGlnArgLeuGlnAspLyArgGlnH1sCyS 340
Qy      1021  GTCCCTTTGAAAAAATTAAGGACGACACAAAGAAAGAGAGTACTTACCCCACTATTA 1080
Db      341  ValLeuLeuLysh1leLysh1AspThrLysh1Lysh1GlyAlaThrLeuProGlnH1s1le 360
Qy      1081  CTTGCGGAGATGTTCTCTCCAGATTCTTTCATTTTACTGCTGTGTAATCCGCAATTCCT 1140
Db      361  ProAlaGlyCysh1SerLeuGlnPhe1lePheThrTyrCysh1GlnL1leArgAl1lePro 380
Qy      1141  AAAAAGCATTTTTCGAGCCCTTGTGACTATACAGTGAACAGTGTGAAAAGCCGACG 1200
Db      381  LysLysh1aPheLeuArgAlaLeuValAspTyrThrSerAspSerAlaGlnLysh1Arg 400
Qy      1201  CTACAGAGCTGTGCTAGTAAACAAAGGGGACCCGATTAATACCCGCTTGTACAGATGCC 1260
Db      401  LeuGlnGlnLeuCysh1SerLysh1GlnGlyAlaAspTyrSerAspPheValArgAspAla 420
Qy      1261  TGTGCGCTGTTGTGATCTCTCTGCTGCTTCCCTTCTTGGCAGCCACGCTAGTCTC 1320
Db      421  Cysh1Acysh1LeuLeuAspLeuLeuValaPheProSerCysh1ProProLeuSerLeu 440
Qy      1321  CTGCTCGAACAATCTTCTTAACCTTCAACCCAGACCATATTTGTGTGCAAGCTCAAGTTTA 1380
Db      441  LeuLeuGlnH1sLeuProLysh1LeuGlnProArgProTyrSerCysh1AspSerSerLeu 460
Qy      1381  TTTTCAACCAAGAAAGCTCATTTTGTCTTCAACATTTGTGAATTTGTCTACTGCCACA 1440
Db      461  PheH1sProGlyLysh1LeuH1sPheValaPheAsn1leValGlnPheLeuSerThrAlaThr 480
Qy      1441  ACAGAGGTTCTGGGAAAGGAGTATGTACAGCTGGCTGGCTGTTGGTGTCTTCAGTT 1500
Db      481  ThrGlnValLeuArgLysh1GlyValaCysh1GlyThrGlyLeuAlaLeuValaSerVal 500
Qy      1501  CTTTCAAGCAACATATGATCCATGACATGAAGACGGGAAAGCCCTGAGCTCTTAAGATA 1560
Db      501  LeuGlnProAsn1leH1sAlaSerH1sGlnLysPheGlyLysh1AlaLeuAlaProLysh1le 520

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Qy      1561  TCACTCTCTCCGACAAACAATTTCTTCCACTTACAGATGACCCCTCATCCTCCATC 1620
Db      521  Ser1leSerProAlaGlnThrThrAsnSerPheH1sLeuProAspProSer1lePro1le 540
Qy      1621  ATAATGTGGGTCCAGGAACCGGATAGACCCCGTTTATGTGGTTCTTACCAATAGAGAG 1680
Db      541  H1leMetValGlyProGlyThrGly1leAlaProPheH1leGlyPheLeuGlnH1sArgGln 560
Qy      1681  AAATCCCAAGAAACAACCCAGATGGAATTTTGGACCAATGTGG---TTTGTGGCTGC 1737
Db      561  LysLeuGlnGlnGlnH1sProAspGlyAsnPheGlyAlaMetTrrLeuPhePheGlyCyS 580
Qy      1738  AGCATTAGGATAGATGATTAATCTTATCAGAAAAGAGCTGACACTTCTTAAACATAGGG 1797
Db      581  ArgH1sLysh1AspArgAspTyrLeuPheArgLysh1LeuArgH1sPheLeuLysh1Gly 600
Qy      1798  ATCTTAATCATCTTAAAGTTTCTTCTCTCAAGATGCTCTCTGTGGGAGAGGAAAGCC 1857
Db      601  H1leuThrH1sLeuLysh1ValSerPheSerArgAspAlaProValGlyGlnGlnL1le 620
Qy      1858  CCAGCAAGATGTGTACAGACACATCTCAGTTATGCGCCAGCAGGTGGGAGAAATCTTC 1917
Db      621  ProAlaLysh1TyrValGlnAspAsn1leGlnLeuH1sGlyGlnGlnValAlaArg1leLeu 640
Qy      1918  CTCGAGGAAACGGCCATATTATGTGTGTGAGATGCAAAAGATATGAGCCAGATGTA 1977
Db      641  LeuGlnGlnLysh1GlyH1s1leTyrValaCysh1AspAlaLysh1AsnMetAlaLysh1Val 660
Qy      1978  CATGATGCCCTTGTGCAATATTAAGCAAAAGAGGTGAGTTGAGTAAATAGAGCAATG 2037
Db      661  H1sAspAlaLeuValGlnH1le1leSerLysh1GlyValaGlyValaGlyLysh1LeuGln 680
Qy      2038  AAAACCTGGCCACTTTTAAAGAAAGAAACGCTTACCTTACAGATATTGTGCTCA 2091
Db      681  LysThrLeuAlaThrLeuLysh1GlnLysh1ArgTyrLeuGlnAsp1leTrrPser 698

RESULT 6
US-09-371-347A-48
; Sequence 48, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A.
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; FILE OF INVENTION: DEFECTS, CARDIOVASCULAR DISEASE, AND CANCER
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; PRIOR FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 48
; LENGTH: 689
; TYPE: PRT
; ORGANISM: Homo sapiens
US-09-371-347A-48

Alignment Scores:
Pred. No.: 2,42e-64 Length: 689
Score: 3461.50 Matches: 686
Percent Similarity: 98.42% Conservative: 1
Best Local Similarity: 98.28% Mismatches: 10
Query Match: 91.96% Indels: 10
DB: 1 Gaps: 7
us-09-371-347A-45 (1-2094) x US-09-371-347A-48 (1-689)

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QY 1099 CAGTTCAATTTTACTGGTGTCTTGAATCCGAGCAATTCCTAAAGGATTTTGGCA 1158
Db 368 ArgThrAlaLeuThrTyrTyrLeuAspIleThrAsnProProAlaValLeuTyr 387
QY 1159 GCCCTTGAGCATATACAGTACAGTACGCTGAAAAGCCAGCATACAGAGCTGACGT 1218
Db 388 GluLeuAlaGlnTyrAlaSerGluProSerGluGlnGluLeuArgGlyMetAlaSer 407
QY 1219 AAACAGAGGAGGACCCGAT-----TATAGCCGCTTTGTACAGATAGCTGTGCTTG 1272
Db 408 SerSerGlyGluGlyGluLeuTyrLeuSerTyrValValGluAlaArgArgHisIle 427
QY 1273 TTGATGTCCTCCCTCGCTTCCCTTCCGACACACAGCTCAGCTCCTGCGAATC 1332
Db 428 LeuAlaIleLeuGlnAspCysProSerLeuArgProProIleAspHisLeuCyGluLeu 447
QY 1333 CTTCCTAACTTCAACCCAGACATATTCGTGTGCAAGCTCAAGTTATTTTACCCAGCA 1392
Db 448 LeuProArgLeuGlnAlaArgTyrTyrSerIleAlaSerSerSerValHisProAsn 467
QY 1393 AAGCTCAATTTTGTCTTCAACATGTGCAATTTCTGTCTACTGCCAACAAGAGTTCTG 1452
Db 468 SerValHisIleCysAlaValValGluTyrGluThrLysAlaGlyArg-----Ile 485
QY 1453 CGAAGGAGATGATGACAGCGCTGCTGCTGTGCTGCTGCTTCCAGTCTTCCAGCAAC 1512
Db 486 AsnLysGlyValAlaIleAsnThrLeu-----ArgAlaLysGluPro--- 499
QY 1513 ATACATCATCTCCATGAAAGACAGCGGAAAGCCCTGCTCCTAAGATATCCATCTCTCT 1572
Db 500 -----ValGlyGluAsnGlyGlyArgAlaLeuValProMetPheVal----- 513
QY 1573 CGAACAACAATTTCTTCCACTTACCCAGATGACCCCTCAATCCCATCATATATGTTGG 1632
Db 514 ---ArgLysSerGlnPheArgLeuProPheLysAlaThrThrProValIleMetValGly 532
QY 1633 CCAAGAACCGGACCGCCGCTTATTTGGTTCCTACACATACAGAGAAATCCCAAGAA 1692
Db 533 ProGlyThrGlyValAlaProPheIleGlyPheIleGlnGluArgAlaTrpLeuArgGln 552
QY 1693 CAACACCAGATGAAATTTTGGAGCAATGTGTTTGGCTGCTGAGCATATAGATAGG 1752
Db 553 GlnGlyLysGluValGly---GluThrLeuLeuTyrTyrGlyCysArgArgSerAspGlu 571
QY 1753 GATTATCTATTCAGAAAAGAGCTCAGACATTTCTTAAAGCATGGAGATTAATCATCTA 1812
Db 572 AspTyrLeuTyrArgGluGluLeuAlaGlnPheHisArgAspGlyAlaLeuThrGlnLeu 591
QY 1813 AAGGTTCTCTTCAAGAGATGCTCTGTTGGGAGAGAGCAAGCCCAAGCAATATGTA 1872
Db 592 AsnValAlaPheSerArg-----GluGlnSerHisLysValTyrVal 605
QY 1873 CAAGACAACATCCAGCTTCATGCGCAGACAGGTGCGAAGATTCCTCTCAGAGAAAGCC 1932
Db 606 GlnHisLeuLeuLysGlnAspArgGlnHisLeuTrpLys---LeuIleGluGlyAla 624
QY 1933 CATATTTATGTGTGAGATGAGCAAAATATGCGCAAGATGATCATGATCCCTTGTG 1992
Db 625 HisIleTyrValCysGlyAspAlaArgAsnMetAlaArgAspValGlnAsnThrPheTyr 644
QY 1993 CAATATATAGCAAAAGAGTTGAGTGAATACTAGAACCAATGAAAACCTGGCCACT 2052
Db 645 AspIleValAlaGluLeuGlyAlaMetGlnHisAlaGlnAlaValAspTyrIleLysLys 664
QY 2053 TTAAGAAGAAAGACGCTACCTTACAGATATTTGTCTA 2091
Db 665 LeuMetThrLysGlyArgTyrSerLeuAspValTrpSer 677

```

RESULT 9
 US-09-371-347A-60
 ; Sequence 60, Application US/09371347A
 ; GENERAL INFORMATION:

```

; APPLICANT: Gravel, Roy A.
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; TITLE OF INVENTION: DEFECTS, CARDIOVASCULAR DISEASE, AND CANCER
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; PRIOR FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 60
; LENGTH: 41
; TYPE: PRT
; ORGANISM: Homo sapiens
; US-09-371-347A-60

Alignment Scores:
Pred. No.: 0.0444 Length: 41
Score: 215.00 Matches: 41
Percent Similarity: 100.00% Conservative: 0
Best Local Similarity: 100.00% Mismatches: 0
Query Match: 5.71% Indels: 0
DB: 1 Gaps: 0

us-09-371-347a-45 (1-2094) x US-09-371-347A-60 (1-41)

QY 1855 GCCCGAGCAAGTATGTACAGACACATCCAGTTTCCGCGCAGGTGGCAGATC 1914
Db 1 AlaProAlaLysTyrValGlnAspAsnIleGlnLeuHisGlyGlnValAlaArgIle 20
QY 1915 CTCCTCAGAGCAAGCGCATATTTATGTGTGTGAGATGCAAGATATATGCGCAAGAT 1974
Db 21 LeuLeuGlnGluAsnGlyHisIleTyrValCysGlyAspAlaLysAsnMetAlaLysAsp 40
QY 1975 GTA 1977
Db 41 Val 41

RESULT 10
US-09-371-347A-54
; Sequence 54, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A.
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; TITLE OF INVENTION: DEFECTS, CARDIOVASCULAR DISEASE, AND CANCER
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; PRIOR FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 54
; LENGTH: 29
; TYPE: PRT
; ORGANISM: Homo sapiens
; US-09-371-347A-54

Alignment Scores:

```



```
Db      1 LeuGlnProArgProTyrSerCyAlaSerSerLeuPheHisProGlyLysLeu 19
RESULT 14
US-09-371-347A-52
; Sequence 52, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A.
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; TITLE OF INVENTION: DEFECTS, CARDIOVASCULAR DISEASE, AND CANCER
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; CURRENT FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 52
; LENGTH: 20
; TYPE: PRT
; ORGANISM: Homo sapiens
US-09-371-347A-52

Alignment Scores:
Pred. No.:      11.7      Length:      20
Score:          100.00    Matches:      20
Percent Similarity: 100.00% Conservative: 0
Best Local Similarity: 100.00% Mismatches: 0
Query Match:     2.66%   Indels:      0
DB:              1       Gaps:        0

us-09-371-347A-45 (1-2094) x US-09-371-347A-52 (1-20)

Qy      10 TTTCGTACTATATGCTACACAGCGAGCAGCAAGCCATCGCAGAAATATGT 69
Db      1 PheLeuLeuLeuTyrAlaThrGlnGlnGlyGlnAlaLysAlaIleAlaGluGluMetCys 20

RESULT 15
US-09-371-347A-25
; Sequence 25, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A.
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; TITLE OF INVENTION: DEFECTS, CARDIOVASCULAR DISEASE, AND CANCER
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; CURRENT FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 25
; LENGTH: 18
; TYPE: PRT
; ORGANISM: Homo sapiens
US-09-371-347A-25

Alignment Scores:
Pred. No.:      16.1      Length:      18
Score:          94.50    Matches:      17
Query Match:     94.50    Matches:      17
```

```
Percent Similarity: 94.44%      Conservative: 0
Best Local Similarity: 94.44%      Mismatches: 0
Query Match:       2.51%      Indels: 1
DB:                1       Gaps: 1

us-09-371-347A-45 (1-2094) x US-09-371-347A-25 (1-18)

Qy      1714 GGAGCATGTGG--TTTGTGGCTGCAGCATAGGATAGGATATCTATTC 1764
Db      1 GlyAlaMetTrpLeuPhePheGlyCyArgHisIlyAspArgAspTyrLeuPhe 18

RESULT 16
US-09-371-347A-57
; Sequence 57, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A.
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; TITLE OF INVENTION: DEFECTS, CARDIOVASCULAR DISEASE, AND CANCER
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; CURRENT FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 57
; LENGTH: 17
; TYPE: PRT
; ORGANISM: Homo sapiens
US-09-371-347A-57

Alignment Scores:
Pred. No.:      23.2      Length:      17
Score:          87.00    Matches:      17
Percent Similarity: 100.00% Conservative: 0
Best Local Similarity: 100.00% Mismatches: 0
Query Match:     2.31%   Indels: 0
DB:              1       Gaps: 0

us-09-371-347A-45 (1-2094) x US-09-371-347A-57 (1-17)

Qy      1450 CTGCGAAGGAGATATGTACAGCGCTGCGCTGTGTTGCTTCAGTT 1500
Db      1 LeuArgLysGlyValCysThrGlyTrpLeuAlaLeuValAlaSerVal 17

RESULT 17
US-09-371-347A-56
; Sequence 56, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A.
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; TITLE OF INVENTION: DEFECTS, CARDIOVASCULAR DISEASE, AND CANCER
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; CURRENT FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
```



```

Db      515 uProProLeuclYmethrlysaenseAlaGlyLysLeuProLeuLeuMetValGlyPr 535
      |||::: |||
      |||::: |||
Qy      152 -----GCTGTTTCGCTTTTATGCTCACTTA----- 126
      |||::: |||
      |||::: |||
Db      535 oGlyThrGlyValSerValPheLeuSerPheLeuArgLysLeuGlnAs 555
      |||::: |||
      |||::: |||
Qy      125 -----TTCGA-TTCACTATACAGTGAAGATC-----TTCAGAAAATCC-- 88
      |||::: |||
      |||::: |||
Db      555 pSerProSerAspPheValAspValProArgValLeuPhePheGlyCysArgAspSerSe 575
      |||::: |||
      |||::: |||
Qy      87 -----ATGTACACACAGCTTCTCAGACATTTCTTCGATGCGCTTTCCTGTC 38
      |||::: |||
      |||::: |||
Db      575 rValAspAlaIleTyrMetSerGluLeuGluMetPheValSerGluGlyIleLeuThrAs 595
      |||::: |||
      |||::: |||
Qy      37 CCTGCTG 31
      |||:::
      |||:::
Db      595 pleuile 597

RESULT 19
US-09-371-347A-30
; Sequence 30, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A.
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; TITLE OF INVENTION: DEFECTS, CARDIOVASCULAR DISEASE, AND CANCER
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; CURRENT FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 30
; LENGTH: 18
; TYPE: PRT
; ORGANISM: Aspergillus niger
US-09-371-347A-30

Alignment Scores:
Pred. No.: 87.4 Length: 18
Score: 53.00 Matches: 8
Percent Similarity: 76.92% Conservative: 2
Best Local Similarity: 61.54% Mismatches: 3
Query Match: 1.41% Indels: 0
Gaps: 0
DB: 1

us-09-371-347A-45 (1-2094) x US-09-371-347A-30 (1-18)
Qy      1726 TTTTGGCTGCAGCATTAAGATAGGATTAATCTATTC 1764
      |||::: |||
      |||::: |||
Db      6 PhePheGlyCysArgLysSerAspGluAspPheLeuTyr 18
      |||::: |||
      |||::: |||

RESULT 20
US-09-371-347A-26
; Sequence 26, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A.
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; TITLE OF INVENTION: DEFECTS, CARDIOVASCULAR DISEASE, AND CANCER
; FILE REFERENCE: 50004/003003

```

```

; CURRENT APPLICATION NUMBER: US/09/371,347A
; CURRENT FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 26
; LENGTH: 18
; TYPE: PRT
; ORGANISM: Homo sapiens
US-09-371-347A-26

Alignment Scores:
Pred. No.: 90.8 Length: 18
Score: 52.00 Matches: 7
Percent Similarity: 76.92% Conservative: 3
Best Local Similarity: 53.85% Mismatches: 3
Query Match: 1.38% Indels: 0
Gaps: 0
DB: 1

us-09-371-347A-45 (1-2094) x US-09-371-347A-26 (1-18)
Qy      1726 TTTTGGCTGCAGCATTAAGATAGGATTAATCTATTC 1764
      |||::: |||
      |||::: |||
Db      6 TyrTyrGlyCysArgLysSerAspGluAspPheLeuTyr 18
      |||::: |||
      |||::: |||

RESULT 21
US-09-371-347A-29
; Sequence 29, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A.
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; TITLE OF INVENTION: DEFECTS, CARDIOVASCULAR DISEASE, AND CANCER
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; CURRENT FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 29
; LENGTH: 18
; TYPE: PRT
; ORGANISM: Vigna radiata
US-09-371-347A-29

Alignment Scores:
Pred. No.: 90.8 Length: 18
Score: 52.00 Matches: 7
Percent Similarity: 81.25% Conservative: 6
Best Local Similarity: 43.75% Mismatches: 3
Query Match: 1.38% Indels: 0
Gaps: 0
DB: 1

us-09-371-347A-45 (1-2094) x US-09-371-347A-29 (1-18)
Qy      1717 GCATGTGCTTTTGGCTGCAGCATTAAGATAGGATTAATCTATTC 1764
      |||::: |||
      |||::: |||
Db      3 AlaLeuLeuPhePheGlyCysArgAsnArgLysMetAspPheIleTyr 18
      |||::: |||
      |||::: |||

RESULT 22
US-09-371-347A-61
; Sequence 61, Application US/09371347A
; GENERAL INFORMATION:

```

```
; APPLICANT: Gravel, Roy A.
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; CURRENT FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 61
; LENGTH: 9
; TYPE: PRT
; ORGANISM: Homo sapiens
US-09-371-347A-61
```

```
Alignment Scores:
Pred. No.: 721          Length: 9
Score: 51.00           Matches: 9
Percent Similarity: 100.00% Conservative: 0
Best Local Similarity: 100.00% Mismatches: 0
Query Match: 1.35%      Indels: 0
DB: 1                   Gaps: 0
```

us-09-371-347a-45 (1-2094) x US-09-371-347A-61 (1-9)

```
QY      2065 AAAGCTACCTCAGATATTGGTCA 2091
Db      1 LysargTyreuglnAspIleTyrSer 9
```

```
RESULT 23
US-09-371-347A-35
; Sequence 35, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A.
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; CURRENT FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 35
; LENGTH: 18
; TYPE: PRT
; ORGANISM: Gallus gallus
US-09-371-347A-35
```

```
Alignment Scores:
Pred. No.: 94.2          Length: 18
Score: 51.00           Matches: 7
Percent Similarity: 83.33% Conservative: 3
Best Local Similarity: 58.33% Mismatches: 2
Query Match: 1.35%      Indels: 0
DB: 1                   Gaps: 0
```

us-09-371-347a-45 (1-2094) x US-09-371-347A-35 (1-18)

```
QY      1729 TTGGCTGCAGCATAAGATAGGATTTATCTATTC 1764
Db      7 PheGlyCyseArgHisProAspMetAspHisIleTyr 18
```

```
RESULT 24
US-09-371-347A-34
; Sequence 34, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A.
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; CURRENT FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 34
; LENGTH: 18
; TYPE: PRT
; ORGANISM: Oryctolagus cuniculus
US-09-371-347A-34
```

```
Alignment Scores:
Pred. No.: 97.8          Length: 18
Score: 50.00           Matches: 7
Percent Similarity: 83.33% Conservative: 3
Best Local Similarity: 58.33% Mismatches: 2
Query Match: 1.33%      Indels: 0
DB: 1                   Gaps: 0
```

us-09-371-347a-45 (1-2094) x US-09-371-347A-34 (1-18)

```
QY      1729 TTGGCTGCAGCATAAGATAGGATTTATCTATTC 1764
Db      7 PheGlyCyseArgHisProGluGlnAspHisIleTyr 18
```

```
RESULT 25
US-09-371-347A-48
; Sequence 48, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A.
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; CURRENT FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 48
; LENGTH: 689
; TYPE: PRT
; ORGANISM: Homo sapiens
US-09-371-347A-48
```


Alignment Scores:

Pred. No.: 4.19 Length: 698
Score: 49.50 Matches: 17
Percent Similarity: 38.46% Conservative: 8
Best Local Similarity: 26.15% Mismatches: 21
Query Match: 1.33% Indels: 19
DB: 1 Gaps: 2

us-09-371-347a-45 (1-2094) x US-09-371-347a-2 (1-698)

QY 1891 GAAGCTGAGTGTCTTGTACATACCTTGTGCGGGCTTCTCTCCCAAGAGCAT 1832
Db 419 AspaIaCysaIaCysleuLeuAspleuLeuAlaPheProSerCysGlnProleu 438
QY 1831 CTCTTGAGAGAAACCTTAGATGAGTTAGATCCCATGCTTAAGAAATGCTGAGCT 1772
Db 439 SerleuLeuLeuGluHsleuProlysleuGln----- 449
QY 1771 CTCTTGAGATAGTAATCCCTATCCCTATGCTGAGCCCAAAACCATTTGCTCAA 1712
Db 450 -----ProArgProTyrSerCysAlaSerSerleu----- 460
QY 1711 AATTCCATCTGGGT 1697
Db 461 ---PheHisProGly 464

RESULT 28

US-09-371-347a-21

; Sequence 21, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A,
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; PRIOR FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 21
; LENGTH: 698
; TYPE: PRT
; ORGANISM: Homo sapiens
US-09-371-347a-21

Alignment Scores:

Pred. No.: 4.19 Length: 698
Score: 49.50 Matches: 17
Percent Similarity: 38.46% Conservative: 8
Best Local Similarity: 26.15% Mismatches: 21
Query Match: 1.33% Indels: 19
DB: 1 Gaps: 2

us-09-371-347a-45 (1-2094) x US-09-371-347a-21 (1-698)

QY 1891 GAAGCTGAGTGTCTTGTACATACCTTGTGCGGGCTTCTCTCCCAAGAGCAT 1832
Db 419 AspaIaCysaIaCysleuLeuAspleuLeuAlaPheProSerCysGlnProleu 438
QY 1831 CTCTTGAGAGAAACCTTAGATGAGTTAGATCCCATGCTTAAGAAATGCTGAGCT 1772
Db 439 SerleuLeuLeuGluHsleuProlysleuGln----- 449
QY 1771 CTCTTGAGATAGTAATCCCTATCCCTATGCTGAGCCCAAAACCATTTGCTCAA 1712
Db 461 ---PheHisProGly 464

Db 450 -----ProArgProTyrSerCysAlaSerSerleu----- 460

QY 1711 AATTCCATCTGGGT 1697
Db 461 ---PheHisProGly 464

RESULT 29

US-09-371-347a-42

; Sequence 42, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A,
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; PRIOR FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 42
; LENGTH: 698
; TYPE: PRT
; ORGANISM: Homo sapiens
US-09-371-347a-42

Alignment Scores:

Pred. No.: 4.19 Length: 698
Score: 49.50 Matches: 17
Percent Similarity: 38.46% Conservative: 8
Best Local Similarity: 26.15% Mismatches: 21
Query Match: 1.33% Indels: 19
DB: 1 Gaps: 2

us-09-371-347a-45 (1-2094) x US-09-371-347a-42 (1-698)

QY 1891 GAAGCTGAGTGTCTTGTACATACCTTGTGCGGGCTTCTCTCCCAAGAGCAT 1832
Db 419 AspaIaCysaIaCysleuLeuAspleuLeuAlaPheProSerCysGlnProleu 438
QY 1831 CTCTTGAGAGAAACCTTAGATGAGTTAGATCCCATGCTTAAGAAATGCTGAGCT 1772
Db 439 SerleuLeuLeuGluHsleuProlysleuGln----- 449
QY 1771 CTCTTGAGATAGTAATCCCTATCCCTATGCTGAGCCCAAAACCATTTGCTCAA 1712
Db 450 -----ProArgProTyrSerCysAlaSerSerleu----- 460
QY 1711 AATTCCATCTGGGT 1697
Db 461 ---PheHisProGly 464

RESULT 30
US-09-371-347a-44
; Sequence 44, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A,
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A


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; CURRENT FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 44
; LENGTH: 698
; TYPE: PRT
; ORGANISM: Homo sapiens
; US-09-371-347A-44

Alignment Scores:
Pred. No.: 4.19      Length: 698
Score: 49.50      Matches: 17
Percent Similarity: 38.46%      Conservative: 8
Best Local Similarity: 26.15%      Mismatches: 21
Query Match: 1.33%      Indels: 19
DB: 1      Gaps: 2

us-09-371-347A-45 (1-2094) x US-09-371-347A-44 (1-698)

QY 1891 GAAGCTGATGTTGTTGATACATCTTGGCGGCTTCTCTCCCAAGAGACAT 1832
    ||||| ||||| ||||| ||||| |||||
DB 419 Asplacysalacysleuleuapleuleulalephroserysglnproleu 438
QY 1831 CTCTTGAGAGAAACCTTGATGATGATTAAGATCCATGCTTAAGAAATGTTGAGCT 1772
    ||||| ||||| ||||| ||||| |||||
DB 439 SerleuleuleugluhisleuProlyleuGln----- 449
QY 1771 CTTTTCGATGATGATATCCCTATCCCTGAGCCGAGCAAAAACCAATGCTCCAA 1712
    ||||| ||||| ||||| ||||| |||||
DB 450 -----ProargprolysercysalaserSerleu----- 460
QY 1711 AATTTCCATCTGGGT 1697
    ||||| ||||| |||||
DB 461 ---PhehisProgly 464

RESULT 31
US-09-371-347A-23
; Sequence 23, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A.
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; TITLE OF INVENTION: DEFECTS, CARDIOVASCULAR DISEASE, AND CANCER
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; CURRENT FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 23
; LENGTH: 677
; TYPE: PRT
; ORGANISM: Homo sapiens
; US-09-371-347A-23

Alignment Scores:
Pred. No.: 4.37      Length: 677
Score: 49.00      Matches: 20
Percent Similarity: 45.12%      Conservative: 17
Best Local Similarity: 24.39%      Mismatches: 27
Query Match: 1.31%      Indels: 18
DB: 1      Gaps: 4
```

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us-09-371-347A-45 (1-2094) x US-09-371-347A-23 (1-677)

QY 695 ACCGAACGGGTAACTGAGACTCAAACTCTTCAATTCAACATTGATGTTGCTGTC 636
    ||||| ||||| ||||| ||||| |||||
DB 13 SerleulaleValalagluGln---ValSerleuPheSerleuThraPheMetileleuphe 31
QY 635 ACTGCA-----TTTGTCTTCAAAACCTCAGAACTCTTCTT 600
    ||||| ||||| ||||| ||||| |||||
DB 32 SerleulleValGlyleuleuthrTyrrPheleuPheargyslysylsgluGlnVal 51
QY 599 CCTGAATCATGCAATCTCAGAGCTGCTGAGATTCAATGTTGACACCTGACTTC 540
    ||||| ||||| ||||| ||||| |||||
DB 52 ProgluPheThrlyslieglnthrlleuthr-----SerSerValargGluSerPhe 69
QY 539 ACA-----AGCTCTGCTCTCAAGATGAGGTGATGCCACCGG 501
    ||||| ||||| ||||| ||||| |||||
DB 70 ValGluPheMetlyslYthrGlyArgAsnIleleValPheTyrglySerGlnthrlgly 89
QY 500 AGTGGC 495
    |||||
DB 90 ThrAla 91

RESULT 32
US-09-371-347A-28
; Sequence 28, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A.
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; TITLE OF INVENTION: DEFECTS, CARDIOVASCULAR DISEASE, AND CANCER
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; CURRENT FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 28
; LENGTH: 18
; TYPE: PRT
; ORGANISM: Drosophila melanogaster
; US-09-371-347A-28

Alignment Scores:
Pred. No.: 105      Length: 18
Score: 48.00      Matches: 6
Percent Similarity: 76.92%      Conservative: 4
Best Local Similarity: 46.15%      Mismatches: 3
Query Match: 1.28%      Indels: 0
DB: 1      Gaps: 0

us-09-371-347A-45 (1-2094) x US-09-371-347A-28 (1-18)

QY 1726 TTTTGGCTGCGAGCATAGGATAGGATATATCTATTC 1764
    ||||| ||||| ||||| ||||| |||||
DB 6 TyrPheGlyCysArglyArgSerGluAspTyrIleTyr 18

RESULT 33
US-09-371-347A-32
; Sequence 32, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A.
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
```

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; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; FILE REFERENCE: 50004/003003
; CURRENT FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 32
; LENGTH: 18
; TYPE: PRT
; ORGANISM: Homo sapiens
US-09-371-347A-32

Alignment Scores:
Pred. No.: 121      Length: 18
Score: 44.00      Matches: 6
Percent Similarity: 75.00%      Conservative: 3
Best Local Similarity: 50.00%      Mismatches: 3
Query Match: 1.17%      Indels: 0
DB: 1      Gaps: 0

us-09-371-347a-45 (1-2094) x US-09-371-347A-32 (1-18)
Qy 1729 TTTGGCTGCAGCATTAAGATGAGGATTTATCTATTC 1764
Db 7 PhegIyCysArgArgProAspGluAspHisIleTyr 18

RESULT 34
US-09-371-347A-27
; Sequence 27, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A.
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; FILE REFERENCE: 50004/003003
; CURRENT FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 27
; LENGTH: 18
; TYPE: PRT
; ORGANISM: Oryzotolagus cuniculus
US-09-371-347A-27

Alignment Scores:
Pred. No.: 126      Length: 18
Score: 43.00      Matches: 6
Percent Similarity: 69.23%      Conservative: 3
Best Local Similarity: 46.15%      Mismatches: 4
Query Match: 1.14%      Indels: 0
DB: 1      Gaps: 0

us-09-371-347a-45 (1-2094) x US-09-371-347A-27 (1-18)
Qy 1726 TTTTGGCTGCAGCATTAAGATGAGGATTTATCTATTC 1764
Db 6 TyrIyriCySarArgAlaAlaGluAspIyriLeuTyr 18
```

```

RESULT 35
US-09-371-347A-38
; Sequence 38, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A.
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; FILE REFERENCE: 50004/003003
; CURRENT FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 38
; LENGTH: 18
; TYPE: PRT
; ORGANISM: Thiocapsa roseopersicina
US-09-371-347A-38

Alignment Scores:
Pred. No.: 128      Length: 18
Score: 42.50      Matches: 9
Percent Similarity: 61.11%      Conservative: 2
Best Local Similarity: 50.00%      Mismatches: 6
Query Match: 1.13%      Indels: 1
DB: 1      Gaps: 1

us-09-371-347a-45 (1-2094) x US-09-371-347A-38 (1-18)
Qy 1714 GGAGCATGTGCG--TTTGGCTGCAGCATTAAGATGAGGATTTATCTATTC 1764
Db 1 GIYArgAnIrpLeuIlePheGlyAsnArgHisPheHisArgAspHeuIeTyr 18

RESULT 36
US-09-371-347A-37
; Sequence 37, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A.
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; FILE REFERENCE: 50004/003003
; CURRENT FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 37
; LENGTH: 18
; TYPE: PRT
; ORGANISM: Saccharomyces cerevisiae
US-09-371-347A-37

Alignment Scores:
Pred. No.: 139      Length: 18
Score: 40.00      Matches: 6
Percent Similarity: 69.23%      Conservative: 3
Best Local Similarity: 46.15%      Mismatches: 4
```

```
Query Match: 1.06% Indels: 0
DB: 1 Gaps: 0
us-09-371-347a-45 (1-2094) x US-09-371-347a-37 (1-18)

Qy 1726 TTTTGGCTGCAGCATAGGATAGGATTAATCTATTC 1764
Db 6 TyrleuglySerArgHisIleYsArgGluGluTyrleuTyr 18

RESULT 37
US-09-371-347a-36
; Sequence 36, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; TITLE OF INVENTION: DEFECTS, CARDIOVASCULAR DISEASE, AND CANCER
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; PRIOR FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 36
; LENGTH: 18
; TYPE: PRT
; ORGANISM: Escherichia coli
US-09-371-347a-36

Alignment Scores:
Pred. No.: 156 Length: 18
Score: 36.50 Matches: 8
Percent Similarity: 55.56% Conservative: 2
Best Local Similarity: 44.44% Mismatches: 7
Query Match: 0.97% Indels: 1
DB: 1 Gaps: 1

us-09-371-347a-45 (1-2094) x US-09-371-347a-36 (1-18)

Qy 1714 GGAGCATATGCG--TTTGGCTGCAGCATAGGATAGGATTAATCTATTC 1764
Db 1 GlyLysanTrpLeuPhePheGlyAsnProHisPheThrGluAspPheLeuTyr 18

RESULT 38
US-09-371-347a-33
; Sequence 33, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A.
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; TITLE OF INVENTION: DEFECTS, CARDIOVASCULAR DISEASE, AND CANCER
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; PRIOR FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 33
; LENGTH: 18
```

```
; TYPE: PRT
; ORGANISM: Homo sapiens
US-09-371-347a-33

Alignment Scores:
Pred. No.: 159 Length: 18
Score: 36.00 Matches: 6
Percent Similarity: 66.67% Conservative: 2
Best Local Similarity: 50.00% Mismatches: 4
Query Match: 0.96% Indels: 0
DB: 1 Gaps: 0

us-09-371-347a-45 (1-2094) x US-09-371-347a-33 (1-18)

Qy 1729 TTTGGCTGCAGCATAGGATAGGATTAATCTATTC 1764
Db 7 PheGlyCysArgGlnSerGlnLeuAspHisIleTyr 18

RESULT 39
US-09-371-347a-31
; Sequence 31, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A.
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; TITLE OF INVENTION: DEFECTS, CARDIOVASCULAR DISEASE, AND CANCER
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; PRIOR FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 31
; LENGTH: 18
; TYPE: PRT
; ORGANISM: Homo sapiens
US-09-371-347a-31

Alignment Scores:
Pred. No.: 164 Length: 18
Score: 35.00 Matches: 5
Percent Similarity: 66.67% Conservative: 3
Best Local Similarity: 41.67% Mismatches: 4
Query Match: 0.93% Indels: 0
DB: 1 Gaps: 0

us-09-371-347a-45 (1-2094) x US-09-371-347a-31 (1-18)

Qy 1729 TTTGGCTGCAGCATAGGATAGGATTAATCTATTC 1764
Db 7 PheGlyCysArgGlnSerGlnLeuAspHisIleTyr 18

RESULT 40
US-09-371-347a-55
; Sequence 55, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A.
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; TITLE OF INVENTION: DEFECTS, CARDIOVASCULAR DISEASE, AND CANCER
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
```

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; CURRENT FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 55
; LENGTH: 19
; TYPE: PRT
; ORGANISM: Homo sapiens
US-09-371-347A-55

Alignment Scores:
Pred. No.: 156      Length: 19
Score: 35.00      Matches: 7
Percent Similarity: 52.63%      Conservative: 3
Best Local Similarity: 36.84%      Mismatches: 5
Query Match: 0.94%      Indels: 4
DB: 1      Gaps: 1

US-09-371-347A-45 (1-2094) x US-09-371-347A-55 (1-19)

QY 1753 CCTATGCTTATGCTGCGAGCAAAACCAACATTTGCTCCAAATTCATCTGGGT 1697
Db 3 ProkaryoticSerCysAlaSerSerSerUen-----PheHisProGly 17

RESULT 41
US-09-371-347A-36
; Sequence 36, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; CURRENT FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 36
; LENGTH: 18
; TYPE: PRT
; ORGANISM: Escherichia coli
US-09-371-347A-36

Alignment Scores:
Pred. No.: 191      Length: 18
Score: 30.00      Matches: 4
Percent Similarity: 85.71%      Conservative: 2
Best Local Similarity: 57.14%      Mismatches: 1
Query Match: 0.80%      Indels: 0
DB: 1      Gaps: 0

US-09-371-347A-45 (1-2094) x US-09-371-347A-36 (1-18)

QY 1964 ATATCTTTCATCTCCACAC 1944
Db 5 LeuphhehQlysnPrOHs 11

RESULT 42
US-09-371-347A-59
; Sequence 59, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A.
```

```

; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; CURRENT FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 59
; LENGTH: 6
; TYPE: PRT
; ORGANISM: Homo sapiens
US-09-371-347A-59

Alignment Scores:
Pred. No.: 1.08e+03      Length: 6
Score: 29.00      Matches: 6
Percent Similarity: 100.00%      Conservative: 0
Best Local Similarity: 100.00%      Mismatches: 0
Query Match: 0.77%      Indels: 0
DB: 1      Gaps: 0

US-09-371-347A-45 (1-2094) x US-09-371-347A-59 (1-6)

QY 1819 TCCTCTCAAGAGATGCT 1836
Db 1 Serpheserargaspala 6

RESULT 43
US-09-371-347A-58
; Sequence 58, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A,
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; CURRENT FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 58
; LENGTH: 22
; TYPE: PRT
; ORGANISM: Homo sapiens
US-09-371-347A-58

Alignment Scores:
Pred. No.: 164      Length: 22
Score: 29.00      Matches: 6
Percent Similarity: 60.00%      Conservative: 0
Best Local Similarity: 60.00%      Mismatches: 4
Query Match: 0.78%      Indels: 0
DB: 1      Gaps: 0

US-09-371-347A-45 (1-2094) x US-09-371-347A-58 (1-22)
```

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Oy      515  GGATGATGCCACGGAGTCCGCACTTATC 486
      |||  |||||  |||||  |||
Db      7    GlyProGlyThrGlyIleAlaProPheIle 16

RESULT 44
US-09-371-347A-57
: Sequence 57, Application US/09371347A
: GENERAL INFORMATION:
: APPLICANT: Gravel, Roy A,
: APPLICANT: Rozen, Rima
: APPLICANT: Leclerc, Daniel
: APPLICANT: Wilson, Aaron
: APPLICANT: Rosenblatt, David
: TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE.
: TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
: TITLE OF INVENTION: DEFECTS, CARDIOVASCULAR DISEASE, AND CANCER
: FILE REFERENCE: 50004/003003
: CURRENT APPLICATION NUMBER: US/09/371,347A
: CURRENT FILING DATE: 1999-08-10
: PRIOR APPLICATION NUMBER: 09/233,028
: PRIOR FILING DATE: 1999-01-15
: PRIOR APPLICATION NUMBER: 60/071,622
: PRIOR FILING DATE: 1998-01-16
: NUMBER OF SEQ ID NOS: 61
: SOFTWARE: FastSeq for Windows Version 4.0
: SEQ ID NO 57
: LENGTH: 17
: TYPE: PRT
: ORGANISM: Homo sapiens
: US-09-371-347A-57

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Alignment Scores:
Pred. No.: 213 Length: 17
Score: 28.00 Matches: 3
Percent Similarity: 83.33% Conservative: 2
Best Local Similarity: 50.00% Mismatches: 1
Query Match: 0.75% Indels: 0
DB: 1 Gaps: 0

us-09-371-347a-45 (1-2094) x US-09-371-347a-57 (1-17)

OY 204 TGTGTCGGGTGGGTCTCC 187
||| |||||:::
Db 6 CysrhrglytrLewA1a 11

RESULT 45
US-09-371-347A-30
; Sequence 30, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A.,
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; TITLE OF INVENTION: DEFECTS, CARDIOVASCULAR DISEASE, AND CANCER
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A.
; CURRENT FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 30
; LENGTH: 18
; TYPE: PRT
; ORGANISM: Aspergillus niger
US-09-371-347A-30
Alignment Scores:

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Pred. No.:      208                      Length:      18
Score:          27.00                   Matches:      5
Percent Similarity: 66.67%              Conservative:  1
Best Local Similarity: 55.56%            Mismatches:   3
Query Match:    0.72%                   Indels:       0
DB:             1                       Gaps:         0

us-09-371-347a-45 (1-2094) x US-09-371-347A-30 (1-18)
OY      626 TGTCTCAAAACCTCGAATCCTTCTT 600
      ||| |||:: ||| |||||
Db      9 CysarglySerAepgUuAspPheU 17

Search completed: May 9, 2005, 15:33:08
Job time : 27.5 secs

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Search completed: May 9, 2005, 15:33:08
Job time : 27.5 secs

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GenCore version 5.1.6
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OM nucleic - protein search, using frame_plus_n2p model

Run on: May 9, 2005, 15:33:45 ; Search time 5.5 Seconds
(without alignments)
4.586 Million cell updates/sec

Title: us-09-371-347a-47

Perfect score: 3760
Sequence: 1 atcaggaggtctctgtact.....cttcagatattggtcataa 2093

Scoring table:

BLOSUM62
Xgapop 10.0 , Xgapext 0.5
Ygapop 10.0 , Ygapext 0.5
Fgapop 6.0 , Fgapext 7.0
Delop 6.0 , Delext 7.0

Searched: 34 seqs, 6026 residues

Total number of hits satisfying chosen parameters: 68

Minimum DB seq length: 0
Maximum DB seq length: 2000000000

Post-processing: Minimum Match 0%

Maximum Match 100%
Listing first 45 summaries

Command line parameters:

-MODE=frame+np.model -DBY=soft -Q=us-09-371-347a-47 -DB=US09371347a.pep
-SUFFIX=pro -OUT=align47 -MINMATCH=0.1 -LOOPEL=0 -LOOPEXT=0 -UNITS=bits
-START=1 -END=1 -MATRIX=blosum62 -TRANS=human40.cdi -LIST=45 -DOCALIGN=200
-THR SCORE=pct -THR MAX=100 -THR MIN=0 -ALIGN=45 -MODE=LOCAL -OUTFMT=pro
-NORM=ext -HEADSIZE=500 -MINLEN=0 -MAXLEN=200000000 -NCPU=6 -NO_XLPEX
-NGC SCORES=0 -LONGLOG -THREADS=1 -XGAPOP=10 -XGAPEXT=0.5 -FGAPOF=6 -FGAPEXT=7
-YGAPOF=10 -YGAPEXT=0.5 -DELOP=6 -DELEXT=7

Database : US09371347a.pep:*

Pred. No. is the number of results predicted by chance to have a
score greater than or equal to the score of the result being printed.
and is derived by analysis of the total score distribution.

SUMMARIES

Result No.	Score	Query Match	Length	DB ID	Description
1	3590.5	95.5	698	1 US-09-371-347a-2	Sequence 2, App1
2	3590.5	95.5	698	1 US-09-371-347a-21	Sequence 21, App1
3	3586.5	95.4	698	1 US-09-371-347a-42	Sequence 42, App1
4	3580.5	95.2	698	1 US-09-371-347a-44	Sequence 44, App1
5	3576	95.1	697	1 US-09-371-347a-46	Sequence 46, App1
6	3504.5	93.2	689	1 US-09-371-347a-48	Sequence 48, App1
7	895.5	23.8	682	1 US-09-371-347a-22	Sequence 22, App1
8	713.5	19.0	677	1 US-09-371-347a-23	Sequence 23, App1
9	215	5.7	611	1 US-09-371-347a-60	Sequence 60, App1
10	158	4.2	29	1 US-09-371-347a-54	Sequence 54, App1
11	117	3.1	22	1 US-09-371-347a-58	Sequence 58, App1
12	116	3.1	23	1 US-09-371-347a-53	Sequence 53, App1
13	109	2.8	19	1 US-09-371-347a-25	Sequence 25, App1
14	104	2.9	18	1 US-09-371-347a-55	Sequence 55, App1
15	100	2.7	20	1 US-09-371-347a-52	Sequence 52, App1
16	87	2.3	17	1 US-09-371-347a-57	Sequence 57, App1
17	68	1.8	14	1 US-09-371-347a-56	Sequence 56, App1
18	61.5	1.6	682	1 US-09-371-347a-22	Sequence 22, App1
19	61	1.6	18	1 US-09-371-347a-34	Sequence 34, App1
20	61	1.6	18	1 US-09-371-347a-35	Sequence 35, App1
21	58	1.5	18	1 US-09-371-347a-26	Sequence 26, App1

22	58	1.5	18	1	US-09-371-347a-30	Sequence 30, Appl
23	57	1.5	18	1	US-09-371-347a-38	Sequence 38, Appl
24	55	1.5	18	1	US-09-371-347a-32	Sequence 32, Appl
25	54	1.4	18	1	US-09-371-347a-29	Sequence 29, Appl
26	53	1.4	18	1	US-09-371-347a-28	Sequence 28, Appl
27	51	1.4	9	1	US-09-371-347a-61	Sequence 61, Appl
28	51	1.4	18	1	US-09-371-347a-36	Sequence 36, Appl
29	51	1.4	18	1	US-09-371-347a-37	Sequence 37, Appl
30	50	1.3	689	1	US-09-371-347a-48	Sequence 48, Appl
31	49	1.3	18	1	US-09-371-347a-27	Sequence 27, Appl
32	49	1.3	677	1	US-09-371-347a-23	Sequence 23, Appl
33	49	1.3	697	1	US-09-371-347a-46	Sequence 46, Appl
34	49	1.3	698	1	US-09-371-347a-21	Sequence 21, Appl
35	49	1.3	698	1	US-09-371-347a-42	Sequence 42, Appl
36	49	1.3	698	1	US-09-371-347a-44	Sequence 44, Appl
37	49	1.3	698	1	US-09-371-347a-33	Sequence 33, Appl
38	42	1.1	18	1	US-09-371-347a-31	Sequence 31, Appl
39	40	1.1	18	1	US-09-371-347a-55	Sequence 55, Appl
40	34.5	0.9	19	1	US-09-371-347a-39	Sequence 39, Appl
41	34	0.9	19	1	US-09-371-347a-40	Sequence 40, Appl
42	31	0.8	18	1	US-09-371-347a-36	Sequence 36, Appl
43	30	0.8	18	1	US-09-371-347a-35	Sequence 35, Appl
44	29	0.8	6	1	US-09-371-347a-59	Sequence 59, Appl
45	29	0.8	22	1	US-09-371-347a-58	Sequence 58, Appl

ALIGNMENTS

RESULT 1
US-09-371-347a-2
Sequence 2, Application US/09371347a
GENERAL INFORMATION:
APPLICANT: Gravel, Roy A.
APPLICANT: Rozen, Rima
APPLICANT: Leclerc, Daniel
APPLICANT: Wilson, Aaron
APPLICANT: Rosenblatt, David
TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
TITLE OF INVENTION: DEFECTS, CARDIOVASCULAR DISEASE, AND CANCER
FILE REFERENCE: 50004/003003
CURRENT APPLICATION NUMBER: US/09/371,347a
CURRENT FILING DATE: 1999-08-10
PRIOR APPLICATION NUMBER: 09/232,028
PRIOR FILING DATE: 1999-01-15
PRIOR APPLICATION NUMBER: 60/071,622
PRIOR FILING DATE: 1998-01-16
NUMBER OF SEQ ID NOS: 61
SOFTWARE: FastSeq for Windows Version 4.0
SEQ ID NO 2
LENGTH: 698
TYPE: PRT
ORGANISM: Homo sapiens
US-09-371-347a-2

Alignment Scores:

Pred. No.: 4.26e-66 Length: 698
Score: 3590.50 Matches: 696
Percent Similarity: 99.71% Conservative: 0
Best Local Similarity: 99.71% Mismatches: 1
Query Match: 95.49% Indels: 2
DB: 1 Gaps: 1

us-09-371-347a-47 (1-2093) x US-09-371-347a-2 (1-698)

QY	1	ATGAGAGGTTCTGTTACTATATGCTACACAGCAGGACGCAAGGCATCGCAGAA	60
DB	1	MetArgArgheueuenuTyrrAlaThrGlnGlnGlyGlnAlaIysAlaIleAlaGlu	20
QY	61	GAATGTGTGACAGAGCTGTGTCATGCAATTTTGTGACATCTTCACTGTATTAGGAA	120
DB	21	GlutCysGlnGlnAlaValAlaValHisGlyPheSerAlaIspneuHisCysIleSerGlu	40


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QY      1857  CCAGCAAGTATGTACAAGACAACAATCCAGCTTCAATGGCCAGCGATGCCAGATCCTC 191
Db      621  PRAALATYTYTVAIGHASPSASNLGGTLEUHSIGLYINGINVAIALARGTILEU 640
QY      1917  CTCGACGGAACCGGCATATTTATGTGTGTGAGATGCAAGAAATATATGCCAAGATGTA 1976
Db      641  LEUGINGIUAENGUHYHSITILETYTALCYSGIYASPRALALYASNMELALILYASPYA 660
QY      1977  CATGATGCCCTTGTGCAAAATATTAAGCAAAAGAGTTGAGATTGAAAACTGAAGCAATG 2036
Db      661  HISAPRALALEUVALGHLIELLESERYSGIUALGIVAGLYULEUGIUALAMET 680
QY      2037  AAAACCCCTGGCCACTTTAAAGAAAGAAAACGCTCACTTCAGAGATATTGTGCA 2090
Db      681  LYSTHRLLEUALATHLEULYSGIULYLSATGYTLEUGINASPRILETTPSER 698

RESULT 3
US-09-371-347A-42
; Sequence 42, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A,
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBER
; TITLE OF INVENTION: DEFECTS, CARDIOVASCULAR DISEASE, AND CANCER
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371.347A
; CURRENT FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FASTSEQ for Windows Version 4.0
; SEQ ID NO 42
; LENGTH: 698
; TYPE: PRF
; ORGANISM: Homo sapiens
US-09-371-347A-42

Alignment Scores:
Pred. No.: 5,066-66 Length: 698
Score: 3586.50 Matches: 695
Percent Similarity: 59.71% Conservative: 1
Best Local Similarity: 99.57% Mismatches: 1
Query Match: 95.39% Indels: 2
DB: 1 Gaps: 1

US-09-371-347A-47 (1-2093) x US-09-371-347A-42 (1-698)
QY      1  ATGAGGAGGTTTCTGTACTATATGCTACACAGACGAGGACGGAAGGCCATGCGAGAA 60
Db      1  MetATGATGPhleuLeuLeuTyTALThrGInGInGInGInAlaIleAGlu 20
QY      61  GAATATGTCGAGCAAGCTGTGGTACATGATTTCTGCAAGATCTTCACTGATTAATGAA 120
Db      21  GtulleCysGInGInAlaValAlaValHSISelyPheSerAlaasPLeuHSISyleSerGlu 40
QY      121  TCCGATTAAGTATGACTATAAAACGAAACAGACTCCTCTGTGTGTGTGGTTTCAACAG 180
Db      41  SeraspyrTyTzAsPLeuLeuTyThGIdurHLaPLeuValValValaSerThThr 60
QY      181  GGCACCGGAGAACCCACCCGACACAGCCCGCAAGTTTGTAAAGAAATACAGAACCAACA 240
Db      61  GtYthrGtIyAsPProCAsPThrAlaArgLySPheValLySGuIlleGInASnglInThr 80
QY      241  CTGCGCGGTGATTTCTTGTCTCACCTGGGATGATGGGTAACTGGGGTCCGGATTCAGAA 300
Db      81  LeuPProValaasPhePheAlaHSISeuaTgTyTgIyLeuLeuGlyLeuGlyAsPserGlu 100

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QY	301	TACACCTA	CTTTTGA	AGGGGGG	GAAGTA	TTGATTA	ACA	CTTCA	AGAGCTT	GAGGCC	360	
Db	101	TyrrhrTyrrPheCys	asnGlyGlyLysLeu	Leu	Asp	Lys	Asn	Gly	Asn	GlyLeuGlyVal	120	
QY	361	CGGCA	TTTCTT	TGAC	CTGGA	CAAC	ATG	CACTG	TAGAGG	TTTGA	420	
Db	121	ArgHisPhe	TyrIa	AspThrGlyHis	Asn	Asp	Asp	Val	GlyLeu	GlyVal	140	
QY	421	CCG	TGAG	TTGCT	GGAC	CTTGGC	CA	CCCT	CGA	AAAGCA	480	
Db	141	Pro	Trip	Leu	Ala	GlyLeu	Trip	Pro	Ala	Leu	ArgLysHisPhe	160
QY	481	GAGGAG	ATA	TG	CGCGCA	CTCCCG	TGGGCAT	CAC	CTTGCAT	CTCTTG	540	
Db	161	Glu	Glu	Leu	Leu	Leu	Pro	Val	Ala	Ser	Pro	180
QY	541	AAG	TGAG	CT	GT	CTAC	CA	TGAA	TTC	TCA	600	
Db	181	Lys	Ser	Glu	Leu	Leu	His	Asn	Leu	Val	100	
QY	601	AGAA	AGG	ATT	TGAG	TTTGA	ACCA	AAATG	CACTG	AAAC	660	
Db	201	Arg	Lys	Asn	Ser	GlyLeu	Val	Leu	Gly	His	220	
QY	661	ATT	GAG	ACT	TG	AGCT	CT	CA	TTC	AC	720	
Db	221	I	Leu	Ala	Phe	Glu	Asn	Ser	Leu	Thr	240	
QY	721	AAT	TCT	CG	TTT	TAC	CCCG	GAAT	TAT	TAC	780	
Db	241	Asn	Leu	Pro	GlyLeu	Pro	GlyLeu	Val	His	Leu	260	
QY	781	GAG	AA	AGC	CA	TAT	CT	TG	CACT	TC	840	
Db	261	Glu	Glu	Ser	Glu	Val	Leu	Ser	Val	Thr	280	
QY	841	GCAG	TTCA	ACT	TAC	GA	TGAT	GCA	TAA	AAACCA	900	
Db	281	Ala	Val	Glu	Leu	Thr	Thr	Asn	Asp	Ala	300	
QY	901	TCA	AAT	CA	CA	CTT	TC	CA	CT	TC	960	
Db	301	Ser	Asn	Thr	Asp	Phe	Ser	Tyr	Glu	Pro	320	
QY	961	GAT	T	CT	G	A	T	C	A	A	1020	
Db	321	Asp	Ser	Glu	Val	Glu	Ser	Leu	Glu	Arg	340	
QY	1021	GTC	CTT	T	G	A	A	A	A	A	1080	
Db	341	Val	Leu	Leu	Ser	Val	Leu	Asp	Thr	Lys	360	
QY	1081	CCT	G	G	G	A	T	T	C	T	1140	
Db	361	Pro	His	Gly	Ser	Ser	Leu	Glu	His	Leu	380	
QY	1141	AAAA	AG	CAT	T	T	T	T	T	T	1200	
Db	381	Lys	Lys	Ala	Phe	Leu	Arg	Ala	Leu	Val	400	
QY	1201	CTA	CA	G	A	G	G	C	T	G	1260	
Db	401	Leu	Glu	Leu	Leu	Ser	Ser	Val	Glu	Val	420	
QY	1261	TG	T	C	T	G	C	T	T	T	1320	
Db	421	Cys	Ala	Cys	Leu	Leu	Asp	Leu	Leu	Val	440	
QY	1321	CTG	CT	CGA	CA	ACT	T	T	T	T	1380	
Db	441	Leu	Leu	Glu	His	Ser	Pro	Lys	Glu	Val	460	

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Qy 1381 TTTTACCACGAAAGCTCCATTTTGTCTTCAAACTGTGGAAATTCTGTCTACGACCA 1440
Db PhehIsProGlyLysLeuHisPheVal.PheasnIleValGIupheLeuSerThAlaThr 480
Qy 1441 ACAGAGGTTCTCGCGAAGGAGTATGTACAGAGCTGGCTGGCTGGTGGTCTTCAGTT 1500
Db ThreIuValIleuValGlySerGIyValCysThrGlyTyrLeuAlaIleuValAlaSerVal 500
Qy 1501 CTTGACGCCAAACATACATGATCCCATGAGACAGCGGGGAAAGCCCTGGCTCTAAGATA 1560
Db LeuGIInProasnIleHisAlaSerHisGlyIuPserGlyLysAlaIleuAlaProIyIle 520
Qy 1561 TTCATCTCTCTCCGACACACAAATTTCTTCCATCTTACCATGATGACCCCTCAATCCCATC 1620
Db SerIleSerProArgThrThrAlaSerPheHisIleuProAspProSerIleProIle 540
Qy 1621 ATATGTGGGGTCCAGGAACCGGATACCCCGTTATTTGGGGTCCATGACATGAG---- 1676
Db ILeuValGIyProGlyThrGIyIleAlaProPheIleGIyPheLeuGIHisValGlyIu 560
Qy 1677 AAATCCCAAGAAACAAACCCAGATGGAATTTTGGAGCAATGTGGTGTGTTTTGGCTGC 1736
Db LysIleuGIInGIuGIHisIleProAspGIyHisPheGIyAlaMetGIyLeuPhePheGIyCys 580
Qy 1737 AGCATTAAGATAGGATTTATCTATTCAAAAGAGCTCAACATTTCTTAAGCATGGG 1796
Db ArgHisLysAspArgTyrLeuPheArgLysGIuIleuAlaGHisPheLeuLysHisGIy 600
Qy 1797 ATCTTAATCATCTTAAGGTTTCTCTTCCAGAGATGTCTGTGTTGGGAGAGAGGAGCC 1856
Db ATTTTCTTCTTAAAGTTTCTCTTCCAGAGATGTCTGTGTTGGGAGAGAGGAGCC 1856
Qy 1857 CCAGCAAGTATGTATCAAGACAAACATCCAGCTTCATGGCCAGCGAGTGGCAGATCCTC 1916
Db ProAlaLysTyrValGIHisAspasnIleGIuIleuHisGIyGIInGIuAlaIAlaGIleu 640
Qy 1917 CTCGAGAGAACCGCATATTTATGTGTGTGAGATGCAAAAGATATGCGCAAGATGTA 1976
Db LeuGIInGIuAsnGIyHisGIleGIyValCysGIyAspAlaLysAsnMetAlaLysAspVal 660
Qy 1977 CATGATGCCCTTGTGCAATTAATAAGCAAGAGGTTGAGATGTGAAACTAGAGCATG 2036
Db HisAspAlaLeuValGIHisIleIleSerLysGIuValGIyValGIyLysLeuGIuIaMet 680
Qy 2037 AAAACCTGGCCACATTTAAGAAGAAAGACGCTACTCTTCAGATATTGGTCA 2090
Db LysThrIleuAlaThrIleuLysGIuGIuLysArgTyrLeuGIHisPheIleTyrSer 698

RESULT 4
US-09-371-347A-44
; Sequence 44, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A,
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE.
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; CURRENT FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 44
; LENGTH: 698
; TYPE: PRT
; ORGANISM: Homo sapiens

```

US-09-371-347A-44			
Alignment Scores:			
Pred. No.:	6.55e-66	Length:	698
Score:	3580.50	Matches:	695
Percent Similarity:	99.57%	Conservative:	0
Best Local Similarity:	99.57%	Mismatches:	2
Query Match:	95.23%	Indels:	2
DB:	1	Gaps:	1
us-09-371-347a-47 (1-2093) x us-09-371-347A-44 (1-698)			
QY	1	ATGAGAGAGTTTCTCTTACTATATCTTACACAGCGAGCGGACAGGCAAAAGCCATTCGAGAA	60
DB	1	MetAAGAGPheLeuLeuLeuLeuYrLaThrGInGInGInLaIaYsaLaIaIeAaGlu	20
QY	61	GAATGTGTGAGCAAGCTGTGGTACATGGAATTTCCTGCAGACTTCACATGATTAAGTGA	120
DB	21	GInuEtCySgInGInaIaIaIaIaHIsGInPheSerLaIaSpLeuHIsThrIleSerGIn	40
QY	121	TCCGATAAGTATGACCTTAAAAACGAAACAGCTCCTCTTGTGTGTGTGTTCTACACG	180
DB	41	SerAaPlySTYrAaPLeuLeuYrGInUrLaIaProLeuVaIaIaIaIaIaSerThrThr	60
QY	181	GGCACCAGGAGCCACCCGACACAGCCCGCAGTTTGTTAAGAAATATACAAACCAACA	240
DB	61	GlyThrGInYAspProAaSpThrLaIaArgLySPhaVaIlySgInIleGInaSnGInThr	80
QY	241	CTGCCGATGATTTCTTGTCTCAGCTGCGGTATGGGTACTGGGTCTCGGTATTCAGAA	300
DB	81	LeuProVaIaAspPhePheLaIaHIsLeuMgTYrGInYLeuLeuGInYLeuGInYAspSerGIn	100
QY	301	TACACCTACTTTTGGCAATGGGGGAGAAATATGATTAACGACTTCAGAGCTTGAACC	360
DB	101	TyrThrTYrPheCyAaSnGInYgInYysIleIleAaPlyArgGInGInGInLeuGInYAla	120
QY	361	CGGCAATTTCTATGACACTGAGACATGACATGACTGTGTAGTTTAAACTTGTGTGTAG	420
DB	121	ArgHIsPheTYrAaSpThrGInYHIsaIaAspAaCySvaGInYLeuGInLeuVaIaIaGIn	140
QY	421	CCGTGGATTTGCGGACTCTGGCCAGCCCTCAGAAAGCATTTTATAGTCAAGCAGACAA	480
DB	141	ProTrIleAaGInYLeuTrProLaIeAaGInYHIsPheArgSerSerAaGInYgIn	160
QY	481	GAGAGATTAAGTGGCGCACTCCCGGTGCATCAGCTGCATCTCTTGAAGACAGACTTGTG	540
DB	161	GInGInIleSerGInYAlaLeuProVaIaIaSerProLaSerLeuMgThrAaPLeuVaI	180
QY	541	AAGTCAGAGCTGTACACATGAAATCTCAAGTCGAGCTTCTGAGATTCGATGATTCAGCA	600
DB	181	LySserGInLeuLeuHIsIleGInSerGInVaIaGInLeuMgAaPheAspAaPserGInY	200
QY	601	AGAAAGGATTCGAGATTTTGAAGAAATGGAAGTGAACAGCAACCAATCCAAATGTTGTA	660
DB	201	ArgLyAaAspSerGInVaIaLeuYsgInaSnLaIaIaSerAaSnInSerAaVaIaI	220
QY	661	ATTGAAGACTTTGAGTCTCTCACTTACCCGTTGGTGAACCCCACTTCACAGAGCTCTGTG	720
DB	221	IleGInAaPheGInSerSerIeuthrAaSerVaIaProProLeuSerGInaIaSerLeu	240
QY	721	AATATATCTGTGTTTACCCCGAATATTTACAGGTACATCTGCAGAGATCTTGTGGCAG	780
DB	241	AaHIsIleProGInYLeuProProGInYrLeuGInVaIaHIsleuGInGInSerLeuGIn	260
QY	781	GAGGAAAGCGAATCTGTGTGACTTCAGAGAAATCCAGTTTTCAAAGTCCAAATTTCAAG	840
DB	261	GInGInSerGInVaIaSerVaIaThrSerLaIaAspProVaIaPheGInVaIaProIleSerLyS	280
QY	841	GGAGTTCAACTTACTACGATGATGCGCATTAACCAACCACTGCTGTGTAGATTTGACATT	900
DB	281	AaIaVaIaGInLeuThrThrAaSnAaPHaIaIeYsThrThrLeuLeuVaIaGInLeuAaPlyIe	3000
QY	901	TCAAATACAGACTTTTCTATCAGCTCGAGATGCTTGAAGATTCGCTTAAACAGT	960

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Db      |||
301 SeranThrAspSerLeuYglnProGlyAspAlaPheSerValIleCysProAsnSer 320
Qy      |||
961 GATTCGAGGATCAAGCCTTACCAAGACTGAGCTTGAGATTAAGAGAGACACTGC 1020
Db      |||
321 AspSerGlnValGlnSerLeuGlnPheGlnPheGlnPheGlnPheGlnPheGlnPhe 340
Qy      |||
1021 GTCCCTTTGAAATTAAGGACAGACAAAGAGAGAGAGAGAGAGAGAGAGAGAGAG 1080
Db      |||
341 ValLeuLeuYsIleYsAlaAspThrIleYsGlyAlaThrLeuProGlnIleSile 360
Qy      |||
1081 CTTGCGGAGATGTTCTTCCAGTTTATTCCTGGTGTCTTGAATCCGAGCAATTCCT 1140
Db      |||
361 ProAlaGlyCysSerLeuGlnPheIlePheThrTrpCysLeuGlnIleArgAlaIlePro 380
Qy      |||
1141 AAAAGGACATTTTGGAGGCGCTTGAGACTATACAGTGACAGTGACAGTGACAGGAG 1200
Db      |||
381 LysLysAlaPheLeuAlaGlnAlaLeuValAspTrpThrSerAspSerAlaGlnLysArgArg 400
Qy      |||
1201 CTACAGAGAGCTGTGACAGTAAACAAAGGGGACGCCGATTAATAGCCCTTTGTACGAGATGCC 1260
Db      |||
401 LeuGlnGlnLeuGlnCysSerLysGlnGlnYAlaAlaLysPheSerArgPheValArgAspAla 420
Qy      |||
1261 TGTGCTGCTGTTGGATCTCTCTCTGCTTCCCTTCTTCCGAGCCACCACTCAGTCTC 1320
Db      |||
421 CysAlaCysLeuLeuAspLeuLeuLeuAlaPheProSerCysGlnProProLeuSerLeu 440
Qy      |||
1321 CTGCTGACATCTTCTTAACTTCAACCCAGACCAATTCGATTCGATTCGATTCGATTC 1380
Db      |||
441 LeuLeuGlnIleSleuProLysLeuGlnProArgProLysCysAlaSerSerLeu 460
Qy      |||
1381 TTTCACCCAGAGAAAGCTCAATTTGTCTTCAACATTTGTGAAATTTGTCTACTGCCACA 1440
Db      |||
461 PheHisProGlyLysLeuHisPheValPheAsnIleValGlnPheLeuSerThrAlaThr 480
Qy      |||
1441 ACAGAGGTTCTGCGGAAGGAGATGTATACAGGCTGCGCTTGTGTTGCTTCACTT 1500
Db      |||
481 ThrGlnValLeuArgLysGlnYValCysThrGlnYTrpLeuAlaLeuValAlaSerVal 500
Qy      |||
1501 CTTGAGGCAACATACATGATGCCATGCCATGAGAGACAGCGGAAAGCCCTGAGCTTAAAGATA 1560
Db      |||
501 LeuGlnProAsnIleHisAlaSerHisGlnPheSerLeuYsAlaLeuAlaProLysIle 520
Qy      |||
1561 TCACATCTCTCTCGACAAACAATTTCTTCCACTTACAGATGACCCCTCAATCCCATC 1620
Db      |||
521 SerLeuSerProArgThrTrpAsnSerPheHisLeuProAspPheProSerIleProIle 540
Qy      |||
1621 ATATATGGTGGGTCCAGAGACCGGATAGCCCGTTTATGGGTTCTTACCAACATAG--- 1676
Db      |||
541 IleValIleGlyProGlnYTrpGlnYIleAlaProPheIleGlyPheLeuGlnHisArgGln 560
Qy      |||
1677 AAATCCAGAAACAACAACCCAGATGAAATTTTGGAGCAATGAGTGTGTTTGGCTGC 1736
Db      |||
561 LysLeuGlnGlnGlnIleHisProAspGlnYAsnPheGlnYAlaMetTrpLeuPhePheGlnYCys 580
Qy      |||
1737 AGGATTAAGAGATGAGATTAATCTATTCAGAAAGAGCTCAGACATTTCTTAAAGCATGG 1796
Db      |||
581 ArgHisLysAspArgAspTrpLeuPheArgLysLeuLeuArgHisPheLeuLysHisGly 600
Qy      |||
1797 ATCTTAACATCACTTAAAGGTTTCTTCTCAAGAGATGCTCTGTGGGGAGAGAGAGCC 1856
Db      |||
601 IleLeuThrHisLeuLysValIleSerPheSerArgAspAlaProValGlyGlnGlnGlnAla 620
Qy      |||
1857 CCAGCAAGATATGTAACAAGCAACATCAGCTTCAATGAGCCAGAGCGAGGAGAGATCTC 1916
Db      |||
621 ProAlaLysTrpValGlnAspAsnIleGlnLeuHisLeuGlnGlnValAlaArgIleLeu 640
Qy      |||
1917 CTCGAGAGAGACCGCATATTTATGTGTGTGAGATGCAAGATATATGATGATGATGTA 1976
Db      |||
641 LeuGlnGlnLysGlnHisIleTrpValCysGlnYAspAlaLysAsnMetAlaLysAspVal 660
Qy      |||
1977 CATGATGCCCTTGTGCAATTAATTAAGCAAAAGAGGTTGAGTGAATACTGAAGCAATG 2036

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Db      |||
661 HisAspAlaLeuValGlnIleIleSerLysGlnValGlnYValGlnLysLeuGlnAlaMet 680
Qy      |||
2037 AAAACCTGGCCACTTAAAGAGAGAGAGAGAGAGAGAGAGAGAGAGAGAGAGAGAG 2090
Db      |||
681 LysThrLeuAlaThrLeuLysGlnGlnLysArgTrpLeuGlnIleAspIleTrpSer 698
Qy      |||
2090 LysThrLeuAlaThrLeuLysGlnGlnLysArgTrpLeuGlnIleAspIleTrpSer 700
Db      |||
700 LysThrLeuAlaThrLeuLysGlnGlnLysArgTrpLeuGlnIleAspIleTrpSer 710
Qy      |||
710 LysThrLeuAlaThrLeuLysGlnGlnLysArgTrpLeuGlnIleAspIleTrpSer 720
Db      |||
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Qy      |||
730 LysThrLeuAlaThrLeuLysGlnGlnLysArgTrpLeuGlnIleAspIleTrpSer 740
Db      |||
740 LysThrLeuAlaThrLeuLysGlnGlnLysArgTrpLeuGlnIleAspIleTrpSer 750
Qy      |||
750 LysThrLeuAlaThrLeuLysGlnGlnLysArgTrpLeuGlnIleAspIleTrpSer 760
Db      |||
760 LysThrLeuAlaThrLeuLysGlnGlnLysArgTrpLeuGlnIleAspIleTrpSer 770
Qy      |||
770 LysThrLeuAlaThrLeuLysGlnGlnLysArgTrpLeuGlnIleAspIleTrpSer 780
Db      |||
780 LysThrLeuAlaThrLeuLysGlnGlnLysArgTrpLeuGlnIleAspIleTrpSer 790
Qy      |||
790 LysThrLeuAlaThrLeuLysGlnGlnLysArgTrpLeuGlnIleAspIleTrpSer 800
Db      |||
800 LysThrLeuAlaThrLeuLysGlnGlnLysArgTrpLeuGlnIleAspIleTrpSer 810
Qy      |||
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Db      |||
820 LysThrLeuAlaThrLeuLysGlnGlnLysArgTrpLeuGlnIleAspIleTrpSer 830
Qy      |||
830 LysThrLeuAlaThrLeuLysGlnGlnLysArgTrpLeuGlnIleAspIleTrpSer 840
Db      |||
840 LysThrLeuAlaThrLeuLysGlnGlnLysArgTrpLeuGlnIleAspIleTrpSer 850
Qy      |||
850 LysThrLeuAlaThrLeuLysGlnGlnLysArgTrpLeuGlnIleAspIleTrpSer 860
Db      |||
860 LysThrLeuAlaThrLeuLysGlnGlnLysArgTrpLeuGlnIleAspIleTrpSer 870
Qy      |||
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Db      |||
880 LysThrLeuAlaThrLeuLysGlnGlnLysArgTrpLeuGlnIleAspIleTrpSer 890
Qy      |||
890 LysThrLeuAlaThrLeuLysGlnGlnLysArgTrpLeuGlnIleAspIleTrpSer 900
Db      |||
900 LysThrLeuAlaThrLeuLysGlnGlnLysArgTrpLeuGlnIleAspIleTrpSer 910
Qy      |||
910 LysThrLeuAlaThrLeuLysGlnGlnLysArgTrpLeuGlnIleAspIleTrpSer 920
Db      |||
920 LysThrLeuAlaThrLeuLysGlnGlnLysArgTrpLeuGlnIleAspIleTrpSer 930
Qy      |||
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Db      |||
940 LysThrLeuAlaThrLeuLysGlnGlnLysArgTrpLeuGlnIleAspIleTrpSer 950
Qy      |||
950 LysThrLeuAlaThrLeuLysGlnGlnLysArgTrpLeuGlnIleAspIleTrpSer 960
Db      |||
960 LysThrLeuAlaThrLeuLysGlnGlnLysArgTrpLeuGlnIleAspIleTrpSer 970
Qy      |||
970 LysThrLeuAlaThrLeuLysGlnGlnLysArgTrpLeuGlnIleAspIleTrpSer 980
Db      |||
980 LysThrLeuAlaThrLeuLysGlnGlnLysArgTrpLeuGlnIleAspIleTrpSer 990
Qy      |||
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Db      141  ProtripleaaglyleutrpProAlaleuarglyshispheargserserArglyGln 160
Qy      481  GAGAGTAAGTAGTGCGGACCTCCGGTGGCAATCCTGATCTTGAGGAGCAAGCTTGTG 540
Db      161  GlnGlnleuSerGlyAlaLeuProValAlaSerProAlaSerLeuArgThraAspLeuAl 180
Qy      541  AAGTCAGAGCTGTACACATTTGAATCTCAAGTCAGCTTCTGAGATTGATGATTCAGA 600
Db      181  LysSerGluLeuLeuHisIleGluSerGlnValGluLeuLeuArgPheAspAspSerGly 200
Qy      601  AGAAGAATCTGAGGTTTGAAGCAAAATCAGTGAACAGCAACCAATCCATGTTGTA 660
Db      201  ArgLysAspSerGluValLeuLysGlnAsnAlaValAsnSerAsnGlnSerAsnVal 220
Qy      661  ATTGAAGCTTTGAGTCTCACTTACCCGTTGGATGCCCACTCTCAAGCCTCTGTG 720
Db      221  IleGlnAspPheGlnSerLeuThrArgSerValProProLeuSerGlnAlaSerLeu 240
Qy      721  AATATCTCGTGTACCCCGAGAAATATTACAGGTACATGACAGAGTCTTGGCCAG 780
Db      241  AsnIleProGlyLeuProProGlnIleuGlnValHisLeuGlnGlnSerLeuGln 260
Qy      781  GAGGAAAGCCAAATGATCTGTGACTTCAGCAGATCCAGTTTCAAGTCCCAATTTCAA 840
Db      261  GluGlnSerGlnValSerValThrSerAlaAspProValPheGlnValProIleSer 280
Qy      841  GCACTTCACTTACTACGAATGATGCCATAAAACCACTCTGTGTGTGATTTGACATT 900
Db      281  AlaValGlnLeuThrThrAsnAspAlaIleLysThrThrLeuLeuValGluLeuAsp 300
Qy      901  TCAATATCAGACTTTCTTATCAGCTGTGAGATGCTTCAAGCTGATGCTTCAACAGT 960
Db      301  SerAsnThrAspPheSerTyrGlnProGlyAspAlaPheSerValIleCysProAsn 320
Qy      961  GATTCTGAGTACAAAGCTTCTCCAAAGACTGACGTTGAAGTAAAGAGACACTGC 1020
Db      321  AspSerGluValGlnSerLeuGlnArgGlnLeuGlnAspLysArgGlnHisCys 340
Qy      1021  GTCTTTTGAATAATTAAGGACGACACAAAGAAAGAGACTTACCTTACCCAGCATTA 1080
Db      341  ValLeuLeuLysIleLysAlaAspThrLysLysGlyAlaThrLeuProGlnHisIle 360
Qy      1081  CCTGCGGAGTGTCTCTCCAGTCACTTATTTTACCTGTCTTGAATCCGACCAATTC 1140
Db      361  ProIleGlyCysSerLeuGlnPheIlePheThrTyrCysLeuGlnIleArgAlaIle 380
Qy      1141  AAAAAGCATTTTTCGAGCCCTGTGTGACTATACACAGTGAACAGTGAAGGCGCAG 1200
Db      381  LysIleAlaPheLeuArgAlaLeuValAspTyrThrSerAspSerAlaGluLysArg 400
Qy      1201  CTAACAGAGCTGTGCAATTAACAAAGGCGCAGCCGATTATACCCGTTTGTACGATGC 1260
Db      401  LeuGlnGluLeuCysSerLysGlnGlyAlaAlaAspTyrSerAspPheValArgAsp 420
Qy      1261  TGTGCTGCTGTGTGATCTCTCTCTGCTTCCCTTTCGACGACCACTCAGTCTC 1320
Db      421  CysAlaCysLeuLeuAspLeuLeuLeuAlaPheProSerCysGlnProLeuSerLeu 440
Qy      1321  CTGCTGGAACATCTTCTTAACCTTCAACCCAGACCATATTCGTGTGCAAGCTCAAGT 1380
Db      441  LeuLeuGlnHisIleLeuProLysLeuGlnProArgProTyrSerCysAlaSerSer 460
Qy      1381  TTTCAACCCAGAAAGCTTCATTTTGTCTTCAACATTTGTGAATTTTGTCTACGCCA 1440
Db      461  PheHisProGlyLysLeuHisIlePheValPheAsnIleValGluPheLeuSerThr 480
Qy      1441  ACAGAGGTTTGGCGAAGGAGATGTAACAGGCTGCGCTGTGTGCTTGTCTCAGTT 1500
Db      481  ThrGlnValLeuArgLysGlyValCysThrGlyTyrPheValAlaLeuValAlaSer 500
Qy      1501  CTTGAGCCAAACATACATGATCCCATGAAAGACAGCGGAAAGCCCTGCTCTAAGTA 1560
Db      501  LeuGlnProAsnIleHisIleSerHisIleGlnAspSerGlyLysAlaLeuAlaPro 520

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Qy      1561  TCCATCTCTCCGGAACAACAATTTCTTCCACTTACAGATGACCCCTCAATCCCATC 1620
Db      521  SerIleSerProArgThrThrAsnSerPheHisIleuProAspAspProSerIlePro 1640
Qy      1621  ATAATGTGGTGTCCAGGACCGGCATACGCCCGTTTATGTGGTTCCTTACACATAG 1660
Db      541  IleMetValGlyProGlyThrGlyIleAlaProPheIleGlyPheLeuGlnHisArgGlu 1680
Qy      1677  AAATCCAAAGAACACACCGAGATGGAATTTTGGACCAATGTCGTTGTTTGGCTGC 1720
Db      561  LysLeuGlnGlnGlnHisIleProAspGlyAsnPheGlyAlaMetCys 1740
Qy      1737  AGCATTAAGATAGGAGATTAATCTTATTCAGAAAGAGCTCAGACATTTCTTAACAT 1780
Db      580  ArgHisLysAspArgAspTyrLeuPheArgLysLeuLeuArgHisIlePheLeuHis 1800
Qy      1797  ATCTTAATCTAATCTTAAGGTTTCTCTCTCAAGAGATCTCTGTTGGGAGAGAAACC 1856
Db      600  IleuThrHisIleuLysValSerPheSerArgAspAlaProValGlyGluGluAla 1876
Qy      1857  CCAGCAAGTATGTACAAAGACATCATCAGTTCATGCGCAGCGGAGGAAATCTCTC 1916
Db      620  ProAlaLysTyrValGlnAspAsnIleGlnLeuHisIleGlnGlnValAlaArgIle 1936
Qy      1917  CTCGAGGAGAACGCGCATATTTATGTGTGTGAGATGCAAAAGATATGCGCAAGATG 1976
Db      640  LeuGlnGlnAsnGlnHisIleTyrValCysGlyAspAlaLysAsnMetAlaLysAsp 1996
Qy      1977  CATGATGCCCTTGTGCAATTAATTAAGCAAAAGAGGTGAGTTGAAATACTGAAGCA 2036
Db      660  HisAspAlaLeuValGlnIleIleSerLysGluValGlyValGlyLysLeuGlnAla 2056
Qy      2037  AAAACCTGCGCACTTTTAAAGAAAGAAAGCGTCACTTACAGATATTTGTCTCA 2090
Db      680  LysThrLeuAlaThrLeuLysGluLysArgTyrLeuGlnAspIleTyrSer 697

RESULT 6
US-09-371-347A-48
; Sequence 48, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A.
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE.
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; PRIOR FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 48
; LENGTH: 689
; TYPE: PRS
; ORGANISM: Homo sapiens
US-09-371-347A-48

Alignment Scores:
Pred. No.: 1,74e-64 Length: 689
Score: 3504.50 Matches: 687
Percent Similarity: 98.85% Conservative: 1
Best Local Similarity: 98.71% Mismatches: 1
Query Match: 93.20% Indels: 7
DB: 1 Gaps: 5
us-09-371-347a-47 (1-2093) x US-09-371-347A-48 (1-689)

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APPLICANT: Rozen, Rima
APPLICANT: Leclerc, Daniel
APPLICANT: Wilson, Aaron
APPLICANT: Rosenblatt, David
TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE
TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
FILE REFERENCE: 50004/003003
CURRENT APPLICATION NUMBER: US/09/371,347A
CURRENT FILING DATE: 1999-08-10
PRIOR APPLICATION NUMBER: 09/232,028
PRIOR FILING DATE: 1999-01-15
PRIOR APPLICATION NUMBER: 60/071,622
PRIOR FILING DATE: 1998-01-16
NUMBER OF SEQ ID NOS: 61
SOFTWARE: FastSeq for Windows Version 4.0
SEQ ID NO 22
LENGTH: 682
TYPE: PRT
ORGANISM: Caenorhabditis elegans
US-09-371-347A-22

Alignment Scores:
Pred. No.: 8,99e-16 Length: 682
Score: 895.50 Matches: 235
Percent Similarity: 48.44% Conservative: 121
Best Local Similarity: 31.97% Mismatches: 286
Query Match: 23.82% Indels: 94
DB: 1 Gaps: 15

us-09-371-347a-47 (1-2093) x US-09-371-347A-22 (1-682)
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DB 1 MetthrAspPheLeuIleAlaPheGlySerGlnThrGlyGlnAlaGlnThrIleAlaLys 20
QY 61 GAATGTGTGAGAGCTGTGTACATGATTTTCTGAGATCTTCACTGATTAATGTA 120
DB 21 SerLeuIysGlnLysAlaGlnLeuIleGlyLeuThrProAlaGlnHisAlaLeuAspGlu 40
QY 121 TCCGATTAAGTATGACCTTAACAAACGAAACAGCTCTTGTGTGCTTGTTCACAG 180
DB 41 AsnGlnLysLysPheAsnLeuAsnGlnGlnLysLeuGlyAlaIleValIleValSerThr 60
QY 181 GGCACCGGAGACCCACCGACAGACAGCCGCAAGTTGTTGAAGAAATACAGAACCA 240
DB 61 GlyAspGlyAspAlaProAspAsnCysAlaArgPheValArgArgIleAsnArgAsnSer 80
QY 241 CTGCGGTTGATTTCTTGTCTCACCTGCGGATGAGGTACTGGGCTGCGTGAATTCAGA 300
DB 81 LeuGlnAsnGlnLysLysLeuLysAsnLeuAspTyrValLeuLeuGlyLeuGlyAspSerAsn 100
QY 301 TACACTACTTTTTCATATGCGGAGAGATATTTGATAAAGCATTCAGACCTTGAGACC 360
DB 101 TyrSerSerTyrGlnThrIleProArgLysIleAspLysGlnLeuThrAlaLeuGlyAla 120
QY 361 CGCATTTTATGACACTGACATGACATGATGCTGTAGTGTGAACCTTGTTGAG 420
DB 121 AsnArgLeuPheAspArgAlaGlnAlaAspAsnGlnValGlyLeuGlnLeuGlnValGln 140
QY 421 CCGGATGTTGTGAGCTGTGCGACGCTCGAGAAAGCATTTTGAAGTCAAGACAGAGCAA 480
DB 141 ProTrpIleGlnLysPhePheAlaThrLeuAlaSerArgPheAspIleSerAlaAspLys 160
QY 481 GAGAGATTAAGTGGGACACTCCCGTGGCATCACTGATCCTTGAGACAGACCTTG 540
DB 161 MetAsn-----AlaIleThrGlnSerSerAsnLeuLysLeuAsnGlnAla 175
QY 541 AAGTCAGAG-----CTGCTACACATTTGAATTCAGATGACGCTTCTGAGATTCAT 591
DB 176 LysThrGlnGlnGlnLysLysAlaLeuLeuGlnLysArgIleGlnAspGlnGlnSerAsp 195
QY 592 GATTTCAGAGAA----- 603

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DB 196 AspGlnGlyArgGlyArgValIleGlyIleAspMetLeuIleProGlnHisTyrAspTyr 215
QY 604 AAGGATTTCTGAGTTTGAAGCAAAATGACAGTGAACACCAATCATGTTGTAAT 663
DB 216 ProGlnLysSerLeuLeuLysGlySerGlnThrLeuSerAsnAspGlnLeu----- 233
QY 664 GAAGACTTTGATCTTCACCTTACCCTTCGTTACCC-----CACTCTCAAA 711
DB 234 -----ArgValProIleAlaProGlnProPheIleVal 244
QY 712 GCCTCTGTAATATCTCTGTTTACCCCA-----GAATATTTACAGTACAT 759
DB 245 SerSerValSerAsnArgLysLeuProGlnAspThrLysLeuGlnTyrGlnAsnLeuCys 264
QY 760 CTGACAGAGCTCTGTGGCCAGAGGAAAGCAAGTATCTGACCTTGACAGATCCAGTT 819
DB 265 LysMetProGlnValValThrLysProPheGlnValLeuValAlaSerAlaGlnPheVal 284
QY 820 TTTCAGTGGCCAAATTTCAAGAGCATTCACATTAAGTATGCAATTAAGCAACT 879
DB 285 ThrAsp---ProPheSerLys-----LysIleLysThrLys 295
QY 880 CTGCTGTGAATATGACATTTCAAT-----ACAGACTTTTCTTACGCTTGAGAT 933
DB 296 ArgMetIleThrValAspPheGlyAspHisAlaAlaGlnLeuGlnTyrGlnProGlyAsp 315
QY 934 GCCTTCAGCGTATCTCCCTTACAGATGATTCGAGGTACAAAGCCTTACCAAGACTG 993
DB 316 AlaIleTyrPheCysValProAsnProAlaLeuGlnValAsnPheIleLeuLysArgCys 335
QY 994 CAGCTTGATTAATAAAGAGACACTGCGCTTTGTAATAAAGAGACACAAAGAG 1053
DB 336 GlyValLeuAspIleAlaAspGlnGlnCysGlnLeuSerIleAsnProLysThrGlnLys 355
QY 1054 AAAGAGCTACCTTACCCACATATACCTGCGGAGTCTTCTCCAGTTTATTTACC 1113
DB 356 IleAsnAlaGlnIleProGlnHisValHisLysIleThrThrLeuArgHisMetPheThr 375
QY 1114 TGGTGTCTTGAATCCGAGCAATTCCTAAAGCAATTTTGGAGCGCTTGAGCAT 1173
DB 376 ThrCysLeuAspIleArgArgAlaProGlyArgProLeuLeuIleArgValIleAlaGlnSer 395
QY 1174 ACCAGTACAGTGGTGAAGAGCGAGGCTACAGAGCTGTGCAATTAACAGGCGAGACC 1233
DB 396 ThrSerAspProAsnGlnLysArgArgLeuLeuLysSerAlaGlnGlyMetLys 415
QY 1234 GATTATAGCCGCTTGTATGAGATGCTGTGCTTGTGTGATCTCTCTGCTTTC 1293
DB 416 AspPheThrAspPheValArgThrProGlyLeuSerLeuAlaAspMetLeuPheAlaPhe 435
QY 1294 CTTTCTTCCAGCCACACATCAGTCTCTGCTGCAACATCTTCTTAATCAACCCAGCA 1353
DB 436 ProAsnValLysProProValAspArgLeuIleGlnLeuLeuProAlaGlnIleProArg 455
QY 1354 CCATATTCGTGTGAGAGCTCAAGTTTATTCACCCAGAGAAAGCTCAATTTGCTCTCAAC 1413
DB 456 ProTyrIleMetSerSer-----TyrGlnAsnArgLysAlaArgLeuIleTyrSer 472
QY 1414 ATTGTGAATTTCTGTACTATGACCAACAGAGTTCTGCGGAAGGAGATGTACAGGC 1473
DB 473 GlnMetGlnPheProAlaThrAspGlyArgArgHisSerArgLysGlyLeuAlaThrAsp 492
QY 1474 TGGCTGCGCTTGTGTGTTGCTTCACTTTCAGCCAAACATACATGATCCCATGAAGAC 1533
DB 493 TrpLeuAsnSerLeu----- 497
QY 1534 AGCGGAAAGCCCGGCTTACAGATATTCATCTCTCGAACAACAAATTTCTTCCAC 1593
DB 498 -----ArgIleGlyAspLysValGlnValLeuGlyLysGlnProAlaArgPheArg 514
QY 1594 TTACCA-----GATGACCCCTCAATCCCATCATTAATGTTGGGT 1632

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Qy 1099 CAGTTCAATTTTACCTGGTGTGTAATCCGAGCAATTCCTAAAGCATTTTGGCA 1158
Db 368 ArgThrAlaLeuThrTyrTyrLeuMetPheThrAsnProPheArgThrAsnValLeuTyr 387
Qy 1159 GCCCTGTGACATAACAGTACAGTGTGTAAGGACGAGTACAGAGCTGTGCAGT 1218
Db 388 GluLeuAlaGlnTyrAlaSerGluProSerGluGlnLeuLeuArgLysMetAlaSer 407
Qy 1219 AAACAGAGGACGCCGAT-----TATAGCCGCTTTGACAGATGCTGTGCTTG 1272
Db 408 SerSerGluGlnTyrLysGluLeuTyrLeuSerTrpValAlaGlnAlaArgAlaHisIle 427
Qy 1273 TTGATCTCCCTCCCTGCTTCCCTTCCGACGACACGACGACGCTGCTGCAAT 1332
Db 428 LeuAlaIleLeuGlnAspCysProSerLeuArgProPheAlaSerSerLysValHisProAsn 467
Qy 1393 AAGCTCCATTTTGTCTTCAACATGTGGAATTTCTGTCTACTGCCACAAGAGGTTTG 1452
Db 468 SerValHisIleCysAlaValAlaValGluTyrGluThrLysAlaGlnArg-----Ile 485
Qy 1453 CGAAGAGGAGTATGATACAGGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCT 1512
Db 486 AsnLysGluValAlaThrAsnTrpLeu-----ArgAlaLysGluPro-- 499
Qy 1513 ATACATGATCCCATGAGACAGCGGGAAGCCCTGCTGCTGCTGCTGCTGCTGCTGCT 1572
Db 500 -----ValGluGlnAsnGlyGlyArgAlaLeuValPrometPheVal----- 513
Qy 1573 CGAACAAACAAATTCCTTCCACTTACAGATGACCCCTCAATCCCATATATATGTTGGT 1632
Db 514 ---ArgLysSerGlnPheArgLeuProPheLysAlaThrTrpProValIleMetValGly 532
Qy 1633 CCAGAGACCGGCAATGCGCTTATTTGGGTTCCACAGCAATGAACTCCAGAAACAC 1692
Db 533 ProGlnThrGlnValAlaProPheIleGlnGlnGlnGlnGlnGlnGlnGlnGln 552
Qy 1693 ACCCAGATGGAATTTGGACCAATGTGTTGTTTGGCTGACGAGCATGAAGG 1752
Db 553 GlnGlnLysGlnVal--GlnGlnThrLeuLeuTyrTyrGlyCysArgArgSerAspGln 572
Qy 1753 ATATCTATTTCAGAAAAGAGCTCAGACATTTCTTAAAGCATGGATCTTAACTCATTA 1812
Db 572 spTyrLeuTyrArgGlnGlnLeuAlaGlnPheHisArgAspGlyAlaLeuThrGlnLeu 592
Qy 1813 AGTTTCTCTCTCAAGAGATGCTCTGTGGGAGAGAGAGAGCCCAAGAAAGTATGAC 1872
Db 592 snValAlaPheSerArg-----GlnGlnSerHisLysValIlyrValG 606
Qy 1873 AAGCAACATCCAGCTTCATGCGCAGAGTGGCAGAGATCTCTCCAGAGAAAGCGCC 1932
Db 606 LnhIleLeuLeuLysGlnAspArgGlnHisLeuTrpLys--LeuIleLeuGlnGlnAla 625
Qy 1933 ATATTATGTGTGTGAGATGCAAAAGATATGCGCAGAGATGATCATGATCCCTGTGC 1992
Db 625 IsIleTyrValCysGlyAspAlaArgAsnMetAlaArgAspValGlnAsnThrPheTyr 645
Qy 1993 AAATATAGCAAGAGAGTGGAGTGAATAAAGTGAAGCAATGAAACCTGCGCAATT 2052
Db 645 spIleValAlaGlnGlnGlnGlnGlnGlnGlnGlnGlnGlnGlnGlnGlnGlnGln 665
Qy 2053 TAAAGAAGAAAACGCTACCTTCAGATATTATTTGGTCA 2090
Db 665 eumecthlysglyargtyrserleuaspvaltrpser 677

```

RESULT 9
 US-09-371-347A-60
 ; Sequence 60, Application US/09371347A
 ; GENERAL INFORMATION:

```

; APPLICANT: Gravel, Roy A.
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; TITLE OF INVENTION: DEFECTS, CARDIOVASCULAR DISEASE, AND CANCER
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; PRIOR FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 60
; LENGTH: 41
; TYPE: PRN
; ORGANISM: Homo sapiens
; US-09-371-347A-60

Alignment Scores:
Pred. No.: 0.0552 Length: 41
Score: 215.00 Matches: 41
Percent Similarity: 100.00% Conservative: 0
Best Local Similarity: 100.00% Mismatches: 0
Query Match: 5.72% Indels: 0
DB: 1 Gaps: 0

us-09-371-347a-47 (1-2093) x US-09-371-347A-60 (1-41)

Qy 1854 GCCCAGCAAGTATGTCACAGACACATCCAGTTTACGTCGACAGTGGCAGATC 1913
Db 1 AlaProAlaTyrTyrValGlnAspAsnIleGlnLeuHisGlnGlnGlnGlnGlnGln 20

Qy 1914 CTCCTCAGAGAGAGCGGCATATTATGTGTGAGATGCAAGATATATGCGCAGAGT 1973
Db 21 LeuLeuGlnGlnGlnGlnGlnGlnGlnGlnGlnGlnGlnGlnGlnGlnGlnGlnGln 40

Qy 1974 GTA 1976
Db 41 Val 41

RESULT 10
US-09-371-347A-54
; Sequence 54, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A.
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; TITLE OF INVENTION: DEFECTS, CARDIOVASCULAR DISEASE, AND CANCER
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; PRIOR FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 54
; LENGTH: 29
; TYPE: PRN
; ORGANISM: Homo sapiens
; US-09-371-347A-54

Alignment Scores:

```



```

Db      1 GLYIAMECTTPLEUPhePhGlyGaRghISLysAspaRGaApTyLeuPhe 18

RESULT 14
US-09-371-347A-55
; Sequence 55, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A,
; APPLICANT: Rozen, Rima,
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; FILE REFERENCE: DEFECTS, CARDIOVASCULAR DISEASE, AND CANCER
; CURRENT APPLICATION NUMBER: US/09/371,347A
; PRIOR FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 55
; LENGTH: 19
; TYPE: PRT
; ORGANISM: Homo sapiens
US-09-371-347A-55

Alignment Scores:
Pred. No.:          12.7           Length:         19
Score:              104.00        Matches:         19
Percent Similarity: 100.00%       Conservative:    0
Best Local Similarity: 100.00%     Mismatches:     0
Query Match:        2.77%         Indels:          0
DB:                 1             Gaps:            0

us-09-371-347A-47 (1-2093) x US-09-371-347A-55 (1-19)
Oy      1342 CTTCAACCCAGACCATATTCGTGTCGAAGTCAAGTTATTTCACCAGAAAGCTC 1398
Db      1 LeuGINProAIGProtytSeCyAlaseterSerleuPhehlProGlylsbleu 19

RESULT 15
US-09-371-347A-52
; Sequence 52, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A,
; APPLICANT: Rozen, Rima,
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; FILE REFERENCE: DEFECTS, CARDIOVASCULAR DISEASE, AND CANCER
; CURRENT APPLICATION NUMBER: US/09/371,347A
; PRIOR FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 52
; LENGTH: 20
; TYPE: PRT
; ORGANISM: Homo sapiens
US-09-371-347A-52

Alignment Scores:
Pred. No.:          14.3           Length:         20
Score:              100.00        Matches:         20

```

```

Percent Similarity: 100.00%  Conservative: 0
Best Local Similarity: 100.00%  Mismatches: 0
Query Match: 2.66%  Indels: 0
DB: 1  Gaps: 0

us-09-371-347a-47 (1-2093) x us-09-371-347a-52 (1-20)

Oy 10 TTCTGTTACTATATGCTACACAGCAGGCAAGGCCATCGAGAGAAATGCT 69
    |||||||
Db 1 PheuleuLeuYrAlaTtnGInGInGInGInGInAlaYsaIaIaIaGluGluwecys 20

RESULT 16
US-09-371-347A-57
; Sequence 57, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A,
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE.
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; PRIOR FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 57
; LENGTH: 17
; TYPE: PRT
; ORGANISM: Homo sapiens
US-09-371-347A-57

Alignment Scores:
Pred. NO.: 28.4 Length: 17
Score: 87.00 Matches: 17
Percent Similarity: 100.00% Conservative: 0
Best Local Similarity: 100.00% Mismatches: 0
Query Match: 2.31% Indels: 0
DB: 1 Gaps: 0

us-09-371-347a-47 (1-2093) x us-09-371-347a-57 (1-17)

Oy 1450 CTGCGAAGGAGATATGTCACAGCGCTGCGCCCTTGTTGCTTCAGTT 1500
    |||||||
Db 1 LeuAlrGlySGIValCysTnGInGInGInGInGInValaIaIaSerVal 17

RESULT 17
US-09-371-347A-56
; Sequence 56, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A,
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE.
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; PRIOR FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0

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; SEQ ID NO 56
; LENGTH: 14
; TYPE: PRT
; ORGANISM: Homo sapiens
US-09-371-347A-56

Alignment Scores:
Pred. No.: 73          Length: 14
Score: 68.00          Matches: 14
Percent Similarity: 100.00%  Mismatches: 0
Best Local Similarity: 100.00%  Indels: 0
Query Match: 1.81%          Gaps: 0
DB: 1

us-09-371-347A-47 (1-2093) x US-09-371-347A-56 (1-14)

QY 1402 TTGTCTTCAACATTTGTGGAATTTCTGTCTACTGCCACACA 1443
Db 1 PheValPheAsnIleValGluPheLeuSerThrAlaThr 14

RESULT 18
US-09-371-347A-22
; Sequence 22: Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A.
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; CURRENT FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 22
; LENGTH: 682
; TYPE: PRT
; ORGANISM: Caenorhabditis elegans
US-09-371-347A-22

Alignment Scores:
Pred. No.: 2.82          Length: 682
Score: 61.50          Matches: 113
Percent Similarity: 33.27%  Mismatches: 61
Best Local Similarity: 21.61%  Indels: 175
Query Match: 1.65%          Gaps: 29
DB: 1

us-09-371-347A-47 (1-2093) x US-09-371-347A-22 (1-682)

QY 1353 TCTGGGTGAAGTTTAGAAGATG---TTCAGACGAGAGACTGAGTGGCTGCACAGA 1297
Db 168 SerAsnLeuYsIleuAsnGlnValIleThrGluGluIleuYsIleAlaLeuGlnIle 187
QY 1296 AGGGAAGACGAGAGAGATCCACAAGACGACAGCAGCATCTCGTACAAAGCGGCTATA 1237
Db 188 ArgIleGluAspGluIleuSerAspAspGluIleArgIle-----ArgVal 202
QY 1236 ATGGGCGCCCTTGTTACTGCACAGCTCTGTAGCGCTGCGCTTTTCAGACACTGCAC 1177
Db 203 IleGly-----IleAspMetLeuIleProGluIleIleProGlu 217
QY 1176 GGTAATGTCACAGAGGCTGCACAAATGCTTTTAGAATTCCTGCATTTCAAGACA 1117
Db 218 IleSerLeuLeuYsGlySerGln-----Thr 226

```

```

QY 1116 CCAAGTAAATGAATGAGAGACATCCCGAGGATATGCTGGGATAGTAGTCC 1057
Db 227 LeuSerAsnAspGluIleuAsnValIlePro-----IleAlaArg 239
QY 1056 TTCTCTTGTGTGTGCTGCTTATATTTCAAGACAGCATGCTCTTTATCTTCAAG 997
Db 239 GlnProPheIleValSerSerValSerAsnArg-----LysLeuProGluAspThr 256
QY 996 CTGACGCTTTGGAGTAGAGCTTTGTACCTCAGATACACTGTTAGGGGAGATCCGCGAA 937
Db 256 LysLeuGluThrGluAsnLeuYs-----LysMetProGluValIleThr----- 271
QY 936 GGCATCTCCAGGCTGATAGGAAAGTCTGATTTGAAATGTCCAATTTCAACGACAGT 877
Db 272 -----LysProPheGluVal-----Le 277
QY 876 GGTTTTATGCAATCTGTAGTAAGTTGACCTGCTTGAATGGCACTTGAATAAC 817
Db 277 uValIleValSerIleGluPheValThrAspProPheSerLysIleLysThrLysArgMet 297
QY 816 TGGATCTGCTGAGTCAAGAT-----ACTGCTTCTCCTCGGCAAGACATCC-- 765
Db 297 tIleIleValAspPheGlyAspHisAlaIleGluLeuGlnIleTyroIleProGlyAspAlaIle 317
QY 764 -----TGC-----AGATGTACCTG 751
Db 317 eTyroPheCysValProAsnProAlaLeuGluValAsnPheIleLeuLysArgCys----- 335
QY 750 TAAATATTCGGGGGTAAACCAAGAAATATTCAGAGAGGCTTGAG-----AGTGG 700
Db 336 -----GlyValLeuAspIleAlaAspGlnGlnCysGluLeuSerIleAsnPro 351
QY 699 GGGTACCGAAGGGATGAGGAGCTCAAAAGTCT-----TCAATTACAACATTTGGA 649
Db 351 clysthrGluIleValIleAsnAlaGlnIleProGlyHisValHisLysIleThrThrLeuArg 371
QY 648 TTGGTGTCTGTCACTGATTTGCTTCAAAACCTCAGAAATCTTTCTTCGATCATC 569
Db 371 gHisMetPheThrThrCysLeuAspIleArgArgAlaProGly---ArgProLeuIleArg 390
QY 588 GAATCTCAGAGCTCGACTTGAAGT-----TCAATGTGTAG 553
Db 390 gValIleuAlaGluSerThrSerAspProAsnGluLysArgArgLeuLeuGluIleuLeuCysSe 410
QY 552 CAGC-----TCTGACTTCACAGAGCTGCTGCTCCTCAAGATCAGATGCA 511
Db 410 tAlaGlnGlyMetLysAspPheThrAspPheValArgThrProGlyLeuSerLeuAlaAs 430
QY 510 TGGCACCGGAGTGGCCCACTTATCTCTTCTGCTGCTGAC-----CTAAATAG 457
Db 430 pMetLeuPheAlaPheProAsnValIys-----ProProValAspArgLeuIleGluLe 448
QY 456 CTTTCGAGGGCGTGGCCAGATCCAGCATCCAGGCTCAACCAAGATTCATAACTAC 397
Db 448 uLeuProArgLeuIleProArgProIleArgIleSerMetSerSerIleTyroGluAsnArgLys 466
QY 396 ACAGTCACTGCATGTCACAGTGCATATGAATAGCCGGGCTCCAAAGCTTTGAAGTCTT 337
Db 467 -----AlaArgIle 469
QY 336 ATCAATATCTTCCCCCATTTGCAAAAGTAGTGTTTCTGAATCCAGAGCCCGATA 277
Db 469 u-----IleTyroSerGluMetGluPheProAlaIle 479
QY 276 CCCATACCGAGGTAGCAAGAAATCAACCGGACATGTTGGTTGTGATTTCCCTAAC 217
Db 479 ThrGlyArgArgHisSerArgLysGlyLeuAlaIleAspIleP-----LeuAs 495
QY 216 AAATCTGCGG-----GCTGTGTCGGGTGGGTCTCCGCTG----- 183
Db 495 nSerLeuArgIleGlyAspLysValGlnValLeuGlyLysGluProAlaArgPheArgIle 515
QY 182 -----CCCGTGTATGAACCAACAACAAGAGAGA----- 153

```



```

; APPLICANT: Gravel, Roy A,
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; PRIOR FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 30
; LENGTH: 18
; TYPE: PRT
; ORGANISM: Aspergillus niger
US-09-371-347A-30

```

```

Alignment Scores:
Pred. No.: 85.6 Length: 18
Score: 58.00 Matches: 10
Percent Similarity: 66.67% Conservative: 2
Best Local Similarity: 55.56% Mismatches: 6
Query Match: 1.54% Indels: 0
DB: 1 Gaps: 0

```

us-09-371-347A-47 (1-2093) x US-09-371-347A-30 (1-18)

```

QY 1710 GGAGCAATGTGTTGTTTGGCTGCAGGCATAGAGTATGATTC 1763
Db 1 GlycerthrallleuphegelyCysArglyseraspgluaspheleuty 18

```

```

RESULT 23
US-09-371-347A-38
; Sequence 38, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A,
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; PRIOR FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 38
; LENGTH: 18
; TYPE: PRT
; ORGANISM: Thiocapsa roseopersicina
US-09-371-347A-38

```

```

Alignment Scores:
Pred. No.: 88.9 Length: 18
Score: 57.00 Matches: 10
Percent Similarity: 66.67% Conservative: 2
Best Local Similarity: 55.56% Mismatches: 6
Query Match: 1.52% Indels: 0
DB: 1 Gaps: 0

```

us-09-371-347A-47 (1-2093) x US-09-371-347A-38 (1-18)

```

QY 1710 GGAGCAATGTGTTGTTTGGCTGCAGGCATAGAGTATGATTC 1763
Db 1 GlycerthrallleuphegelyCysArglyseraspgluaspheleuty 18

```

```

RESULT 24
US-09-371-347A-32
; Sequence 32, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A,
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; PRIOR FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 32
; LENGTH: 18
; TYPE: PRT
; ORGANISM: Homo sapiens
US-09-371-347A-32

```

```

Alignment Scores:
Pred. No.: 95.7 Length: 18
Score: 55.00 Matches: 9
Percent Similarity: 66.67% Conservative: 3
Best Local Similarity: 50.00% Mismatches: 6
Query Match: 1.46% Indels: 0
DB: 1 Gaps: 0

```

us-09-371-347A-47 (1-2093) x US-09-371-347A-32 (1-18)

```

QY 1710 GGAGCAATGTGTTGTTTGGCTGCAGGCATAGAGTATGATTC 1763
Db 1 GlycerthrallleuphegelyCysArglyseraspgluaspheleuty 18

```

```

RESULT 25
US-09-371-347A-29
; Sequence 29, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A,
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; PRIOR FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 29
; LENGTH: 18
; TYPE: PRT
; ORGANISM: Vigna radiata
US-09-371-347A-29

```

```

Alignment Scores:
Pred. No.: 59.3 Length: 18
Score: 54.00 Matches: 8
Percent Similarity: 72.22% Conservative: 5
Best Local Similarity: 44.44% Mismatches: 5
Query Match: 1.44% Indels: 0
DB: 1 Gaps: 0

us-09-371-347a-47 (1-2093) x US-09-371-347a-29 (1-18)

QY 1710 GGAGCAATGCTGTTGCTGCGAGCATAGAGATGATTCATTC 1763
Db 1 GlycylserineLeuTyPheGlyCysArgGlnArgSerGluAspTyrIleTyr 18

RESULT 26
US-09-371-347a-28
; Sequence 28, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Rozen, Roy A.
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; CURRENT FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 28
; LENGTH: 18
; TYPE: PRT
; ORGANISM: Drosophila melanogaster
US-09-371-347a-28

Alignment Scores:
Pred. No.: 103 Length: 18
Score: 53.00 Matches: 8
Percent Similarity: 66.67% Conservative: 4
Best Local Similarity: 44.44% Mismatches: 6
Query Match: 1.41% Indels: 0
DB: 1 Gaps: 0

us-09-371-347a-47 (1-2093) x US-09-371-347a-28 (1-18)

QY 1710 GGAGCAATGCTGTTGCTGCGAGCATAGAGATGATTCATTC 1763
Db 1 GlycylserineLeuTyPheGlyCysArgGlnArgSerGluAspTyrIleTyr 18

RESULT 27
US-09-371-347a-61
; Sequence 61, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Rozen, Roy A.
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; CURRENT FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622

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; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 61
; LENGTH: 9
; TYPE: PRT
; ORGANISM: Homo sapiens
US-09-371-347a-61

Alignment Scores:
Pred. No.: 721 Length: 9
Score: 51.00 Matches: 9
Percent Similarity: 100.00% Conservative: 0
Best Local Similarity: 100.00% Mismatches: 0
Query Match: 1.36% Indels: 0
DB: 1 Gaps: 0

us-09-371-347a-47 (1-2093) x US-09-371-347a-61 (1-9)

QY 2064 AAAGCTACCTTCAGATATTTGGTCA 2090
Db 1 LysArgTyrLeuGlnAspIleTyrSer 9

RESULT 28
US-09-371-347a-36
; Sequence 36, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Rozen, Roy A.
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; CURRENT FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 36
; LENGTH: 18
; TYPE: PRT
; ORGANISM: Escherichia coli
US-09-371-347a-36

Alignment Scores:
Pred. No.: 111 Length: 18
Score: 51.00 Matches: 9
Percent Similarity: 61.11% Conservative: 2
Best Local Similarity: 50.00% Mismatches: 7
Query Match: 1.36% Indels: 0
DB: 1 Gaps: 0

us-09-371-347a-47 (1-2093) x US-09-371-347a-36 (1-18)

QY 1710 GGAGCAATGCTGTTGCTGCGAGCATAGAGATGATTCATTC 1763
Db 1 GlycylserineTyrLeuPheGlyAsnProHisPheThrGluAspPheLeuTyr 18

RESULT 29
US-09-371-347a-37
; Sequence 37, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Rozen, Roy A.
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David

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: TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
: TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
: TITLE OF INVENTION: DEFECTS, CARDIOVASCULAR DISEASE, AND CANCER
: FILE REFERENCE: 50004/003003
: CURRENT APPLICATION NUMBER: US/09/371,347A
: CURRENT FILING DATE: 1999-08-10
: PRIOR APPLICATION NUMBER: 09/232,028
: PRIOR FILING DATE: 1999-01-15
: PRIOR APPLICATION NUMBER: 60/071,622
: PRIOR FILING DATE: 1998-01-16
: NUMBER OF SEQ ID NOS: 61
: SOFTWARE: FastSeq for Windows Version 4.0
: SEQ ID NO 37
: LENGTH: 18
: TYPE: prt
: ORGANISM: Saccharomyces cerevisiae
: US-09-371-347A-37

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GENERAL INFORMATION:
APPLICANT: Rozen, Rima A,
APPLICANT: Leclerc, Daniel
APPLICANT: Wilson, Aaron
APPLICANT: Rosenblatt, David
TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
TITLE OF INVENTION: DEFECTS, CARDIOVASCULAR DISEASE, AND CANCER
FILE REFERENCE: 50004/003003
CURRENT APPLICATION NUMBER: US/09/371,347A
PRIOR FILING DATE: 1999-08-10
PRIOR APPLICATION NUMBER: 09/232,028
PRIOR FILING DATE: 1999-01-15
PRIOR APPLICATION NUMBER: 60/071,622
NUMBER OF SEQ ID NOS: 61
SOFTWARE: FastSeq for Windows Version 4.0
SEQ ID NO 44
LENGTH: 698
TYPE: PRT
ORGANISM: Homo sapiens
US-09-371-347A-44

Alignment Scores:
Pred. NO.: 4.21 Length: 698
Score: 49.00 Matches: 17
Percent Similarity: 37.88% Conservative: 8
Best local Similarity: 25.76% Mismatches: 21
Query Match: 1.31% Indels: 20
DB: 1 Gaps: 2

us-09-371-347a-47 (1-2093) x US-09-371-347A-44 (1-698)
QY 1890 GAAGCTGATGTGCTTGTACATACCTTCTGCGGGCTTCTCTCCCAACAGAGCAT 1831
Db 419 AsphlaCySaIaCySbLeuLeuAAsphleuLeuAAlaPheProSerCySgInProbleu 438
QY 1830 CTCTTGAGAGAAACCTTGTAGATGAGTTAAGATCCCATGCTTAAGAAATGCTGAGCT 1711
Db 439 SerleuLeuLeuGluHleuPProlySleuIn----- 449
QY 1770 CTTTTCGAATGATATATCCCTATTCCTTATGCTTCGACGCCAAAAACACACATGCTC 1711
Db 450 -----PArgProlySerCySaIaSerSerleu----- 460
QY 1710 CAAATTCATCTGGGT 1693
Db 461 -----PheHIsProGly 464

RESULT 38
US-09-371-347A-33
Sequence 33, Application US/09371347A
GENERAL INFORMATION:
APPLICANT: Rozen, Rima A,
APPLICANT: Leclerc, Daniel
APPLICANT: Wilson, Aaron
APPLICANT: Rosenblatt, David
TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
FILE REFERENCE: 50004/003003
CURRENT APPLICATION NUMBER: US/09/371,347A
PRIOR FILING DATE: 1999-08-10
PRIOR APPLICATION NUMBER: 09/232,028
PRIOR FILING DATE: 1999-01-15
PRIOR APPLICATION NUMBER: 60/071,622
NUMBER OF SEQ ID NOS: 61
SOFTWARE: FastSeq for Windows Version 4.0
SEQ ID NO 33
LENGTH: 18

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: TYPE: PRT
: ORGANISM: Homo sapiens
US-09-371-347A-33

Alignment Scores:
Pred. No.: 150 Length: 18
Score: 42.00 Matches: 8
Percent Similarity: 62.50% Conservative: 2
Best Local Similarity: 60.00% Mismatches: 6
Query Match: 1.12% Indels: 0
DB: 1 Gaps: 0

us-09-371-347A-47 (1-2093) x US-09-371-347A-33 (1-18)

Cy 1716 ATGCGTGTGTTTGGCTGCAGCATTAAGGATATGATATCATTC 1763
||| ||| ||||| ||||| ||||| ||||| ||||| ||||| |||||
Db 3 MetValLeuValPheGlyCysArgCysSerGlnLeuAspHisLeuTyr 18

RESULT 39
US-09-371-347A-31
; Sequence 31, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Rozen, Roy A.
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosendiat, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; TITLE OF INVENTION: DEFECTS, CARDIOVASCULAR DISEASE, AND CANCER
; FILE REFERENCE: 50004/003003
CURRENT APPLICATION NUMBER: US/09/371.347A
CURRENT FILING DATE: 1999-08-10
PRIOR APPLICATION NUMBER: 09/232,028
PRIOR FILING DATE: 1999-01-15
PRIOR APPLICATION NUMBER: 60/071,622
PRIOR FILING DATE: 1998-01-16
NUMBER OF SEQ ID NOS: 61
SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 31
; LENGTH: 18
; TYPE: PRT
; ORGANISM: Homo sapiens
US-09-371-347A-31

Alignment Scores:
Pred. No.: 160 Length: 18
Score: 40.00 Matches: 7
Percent Similarity: 62.50% Conservative: 3
Best Local Similarity: 43.75% Mismatches: 6
Query Match: 1.06% Indels: 0
DB: 1 Gaps: 0

us-09-371-347A-47 (1-2093) x US-09-371-347A-31 (1-18)

Cy 1716 ATGCGTGTGTTTGGCTGCAGCATTAAGGATATGATATCATTC 1763
||| ||| ||||| ||||| ||||| ||||| ||||| ||||| |||||
Db 3 MetValLeuValPheGlyCysArgGlnSerLysIleAspHisIleTyr 18

RESULT 40
US-09-371-347A-55
; Sequence 55, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Rozen, Roy A.
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosendiat, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; TITLE OF INVENTION: DEFECTS, CARDIOVASCULAR DISEASE, AND CANCER
; FILE REFERENCE: 50004/003003
CURRENT APPLICATION NUMBER: US/09/371.347A

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; CURRENT FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15,622
; PRIOR APPLICATION NUMBER: 60/071,622
; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FASTSEQ for Windows Version 4.0
; SEQ ID NO 55
; LENGTH: 19
; TYPE: PRT
; ORGANISM: Homo sapiens
US-09-371-347A-55

Alignment Scores:
Pred. No.: 180      Length: 19
Score: 34.50      Matches: 7
Percent Similarity: 50.00%      Conservative: 3
Best Local Similarity: 35.00%      Mismatches: 5
Query Match: 0.92%      Indels: 5
DB: 1      Gaps: 1

us-09-371-347a-47 (1-2093) x US-09-371-347A-55 (1-19)
OY 1752 CCTATCCTTATGCTGCGAGCAAAAACACACATTGCTCAAAATTTCATCTGGGT 1693
Db 3 ProArgProTyrSerCysAlaSerSerSerLeu-----PheHisProGly 17

RESULT 41
US-09-371-347A-39
; Sequence 39, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Rozen, Rima
; APPLICANT: Gravel, Roy A.
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; TITLE OF INVENTION: DEFECTS, CARDIOVASCULAR DISEASE, AND CANCER
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; CURRENT FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FASTSEQ for Windows Version 4.0
; SEQ ID NO 39
; LENGTH: 19
; TYPE: PRT
; ORGANISM: Pisum sativum
US-09-371-347A-39

Alignment Scores:
Pred. No.: 183      Length: 19
Score: 34.00      Matches: 6
Percent Similarity: 53.85%      Conservative: 1
Best Local Similarity: 46.15%      Mismatches: 6
Query Match: 0.90%      Indels: 0
DB: 1      Gaps: 0

us-09-371-347a-47 (1-2093) x US-09-371-347A-39 (1-19)
OY 1710 GGAGCATGTGTGTTTGGCTGCGAGCATAGAAGAT 1748
Db 1 GlyLeuAlaTrpLeuPheLeuGlyValAlaHisValasp 13

RESULT 42
US-09-371-347A-40
; Sequence 40, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A.
```

```

; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; TITLE OF INVENTION: DEFECTS, CARDIOVASCULAR DISEASE, AND CANCER
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; CURRENT FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FASTSEQ for Windows Version 4.0
; SEQ ID NO 36
; LENGTH: 18
; TYPE: PRT
; ORGANISM: Escherichia coli
US-09-371-347A-36

Alignment Scores:
Pred. No.: 214      Length: 18
Score: 30.00      Matches: 4
Percent Similarity: 85.71%      Conservative: 2
Best Local Similarity: 57.14%      Mismatches: 1
Query Match: 0.80%      Indels: 0
DB: 1      Gaps: 0

us-09-371-347a-47 (1-2093) x US-09-371-347A-36 (1-18)
OY 1710 GGAGCATGTGTGTTTGGC 1733
Db 1 GlyLeuAlaTrpLeuPheLeuGly 8

RESULT 43
US-09-371-347A-36
; Sequence 36, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A.
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; TITLE OF INVENTION: DEFECTS, CARDIOVASCULAR DISEASE, AND CANCER
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; CURRENT FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FASTSEQ for Windows Version 4.0
; SEQ ID NO 36
; LENGTH: 18
; TYPE: PRT
; ORGANISM: Escherichia coli
US-09-371-347A-36

Alignment Scores:
Pred. No.: 209      Length: 18
Score: 31.00      Matches: 5
Percent Similarity: 62.50%      Conservative: 0
Best Local Similarity: 62.50%      Mismatches: 3
Query Match: 0.82%      Indels: 0
DB: 1      Gaps: 0

us-09-371-347a-47 (1-2093) x US-09-371-347A-40 (1-18)
OY 1710 GGAGCATGTGTGTTTGGC 1733
Db 1 GlyLeuAlaTrpLeuPheLeuGly 8
```

```
QY      1963 ATATCTTCATCTCCACAC 1943
      ::|||::|::|::|::|
Db      5 LeuphepeglyAanProHis 11

RESULT 44
US-09-371-347A-59
; Sequence 59, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A,
; APPLICANT: Rozen, Rima,
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; TITLE OF INVENTION: DEFECTS, CARDIOVASCULAR DISEASE, AND CANCER
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; PRIOR FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 59
; LENGTH: 6
; TYPE: PRT
; ORGANISM: Homo sapiens
US-09-371-347A-59

Alignment Scores:
Pred. No.:      1.08e+03      Length:      6
Score:          29.00         Matches:      6
Percent Similarity: 100.00%    Conservative: 0
Best Local Similarity: 100.00% Mismatches:      0
Query Match:      0.77%       Indels:          0
DB:               1          Gaps:              0

us-09-371-347a-47 (1-2093) x US-09-371-347A-59 (1-6)
QY      1818 TCCTTCTCAGAGATGCT 1835
      |||||
Db      1 SerpheserArgaspala 6

RESULT 45
US-09-371-347A-58
; Sequence 58, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A,
; APPLICANT: Rozen, Rima,
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; TITLE OF INVENTION: DEFECTS, CARDIOVASCULAR DISEASE, AND CANCER
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; PRIOR FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 58
; LENGTH: 22
; TYPE: PRT
; ORGANISM: Homo sapiens
US-09-371-347A-58

Alignment Scores:
```

```
Pred. No.:      183
Score:          29.00         Length:      22
Percent Similarity: 60.00%    Matches:      6
Best Local Similarity: 60.00% Conservative: 0
Query Match:      0.78%       Mismatches:      4
DB:               1          Indels:          0
                        Gaps:              0

us-09-371-347a-47 (1-2093) x US-09-371-347A-58 (1-22)
QY      515 GGTGATGCCACCGGAGTGGCCCACTTATC 486
      |||
Db      7 GlyProglythrGlyIleAlaProPhele 16

Search completed: May 9, 2005, 15:34:18
Job time : 27.5 secs
```

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GenCore version 5.1.6
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OM nucleic - protein search, using frame_plus_n2p model

Run on: May 9, 2005, 15:31:35 ; Search time 5 Seconds
(without alignments)
5.055 Million cell updates/sec

Title: us-09-371-347a-43
Perfect score: 3768
Sequence: 1 atgagagagcttcgtctac.....cttcagatattgctcataa 2097

Scoring table: BLOSUM62
Xgapop 10.0 , Xgapext 0.5
Ygapop 10.0 , Ygapext 0.5
Fgapop 6.0 , Fgapext 7.0
Delop 6.0 , Delext 7.0

Searched: 34 segs, 6026 residues
Total number of hits satisfying chosen parameters: 68

Minimum DB seg length: 0
Maximum DB seg length: 2000000000
Post-processing: Minimum Match 0%
Maximum Match 100%
Listing first 45 summaries

Command line parameters:
-MODEL=frame+n2p,model -DEV=soft -Q=us-09-371-347a-43 -DB=US09371347A-pep
-SUFFIX=ptc -OUT=align43 -MINMATCH=0.1 -LOOPEL=0 -LOOPEXT=0 -UNIT=bits
-START=1 -END=1 -MATRIX=blomsum62 -TRANS=human40.cdi -LIST=45 -DOCALIGN=200
-THR SCORE=ptc -THR MAX=100 -THR MIN=0 -ALIGN=45 -MODE=LOCAL -OUTFMT=ptc
-NORM=ext -HEADSIZE=500 -MINLEN=0 -MAXLEN=200000000 -NCPUS=6 -NO XLPXY
-NEG SCORES=0 -LONGLOC -THREDS=1 -XGAPOP=10 -XGAPEXT=0.5 -FGAPOP=6 -FGAPEXT=7
-YGAPOP=10 -YGAPEXT=0.5 -DELOP=6 -DELEXT=7

Database : US09371347A.pep:*
Pred. No. is the number of results predicted by chance to have a
score greater than or equal to the score of the result being printed,
and is derived by analysis of the total score distribution.

SUMMARIES

Result No.	Score	Query Match	Length	ID	Description
1	3613	95.9	698	1	US-09-371-347A-2
2	3613	95.9	698	1	US-09-371-347A-21
3	3613	95.9	698	1	US-09-371-347A-42
4	3609	95.8	698	1	US-09-371-347A-44
5	3598.5	95.5	697	1	US-09-371-347A-46
6	3470	92.1	689	1	US-09-371-347A-48
7	912	24.2	682	1	US-09-371-347A-22
8	731.5	19.4	677	1	US-09-371-347A-23
9	215	5.7	41	1	US-09-371-347A-52
10	158	4.2	29	1	US-09-371-347A-54
11	117	3.1	22	1	US-09-371-347A-58
12	116	3.1	23	1	US-09-371-347A-53
13	109	2.9	18	1	US-09-371-347A-25
14	104	2.8	19	1	US-09-371-347A-55
15	100	2.7	20	1	US-09-371-347A-52
16	87	2.3	17	1	US-09-371-347A-57
17	68	1.8	14	1	US-09-371-347A-56
18	64.5	1.7	682	1	US-09-371-347A-22
19	61	1.6	18	1	US-09-371-347A-34
20	61	1.6	18	1	US-09-371-347A-35
21	58	1.5	18	1	US-09-371-347A-26

22	58	1.5	18	1	US-09-371-347A-30	Sequence 30, Appl
23	57	1.5	18	1	US-09-371-347A-38	Sequence 38, Appl
24	55	1.5	18	1	US-09-371-347A-32	Sequence 32, Appl
25	54	1.4	18	1	US-09-371-347A-29	Sequence 29, Appl
26	53	1.4	18	1	US-09-371-347A-28	Sequence 28, Appl
27	51	1.4	9	1	US-09-371-347A-61	Sequence 61, Appl
28	51	1.4	18	1	US-09-371-347A-37	Sequence 37, Appl
29	51	1.4	18	1	US-09-371-347A-36	Sequence 36, Appl
30	50	1.3	689	1	US-09-371-347A-48	Sequence 48, Appl
31	50	1.3	697	1	US-09-371-347A-46	Sequence 46, Appl
32	50	1.3	698	1	US-09-371-347A-2	Sequence 2, Appl
33	50	1.3	698	1	US-09-371-347A-21	Sequence 21, Appl
34	50	1.3	698	1	US-09-371-347A-42	Sequence 42, Appl
35	50	1.3	698	1	US-09-371-347A-44	Sequence 44, Appl
36	49	1.3	18	1	US-09-371-347A-27	Sequence 27, Appl
37	49	1.3	677	1	US-09-371-347A-23	Sequence 23, Appl
38	42	1.1	18	1	US-09-371-347A-33	Sequence 33, Appl
39	40	1.1	18	1	US-09-371-347A-31	Sequence 31, Appl
40	34.5	0.9	19	1	US-09-371-347A-55	Sequence 55, Appl
41	34	0.9	19	1	US-09-371-347A-39	Sequence 39, Appl
42	31	0.8	18	1	US-09-371-347A-40	Sequence 40, Appl
43	30	0.8	18	1	US-09-371-347A-36	Sequence 36, Appl
44	29	0.8	6	1	US-09-371-347A-59	Sequence 59, Appl
45	29	0.8	22	1	US-09-371-347A-58	Sequence 58, Appl

ALIGNMENTS

RESULT 1
US-09-371-347A-2
; Sequence 2, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A.
; APPLICANT: Rozen, Rima
; APPLICANT: Lecietc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE;
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; TITLE OF INVENTION: DEFECTS, CARDIOVASCULAR DISEASE, AND CANCER
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; CURRENT FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 2
; LENGTH: 698
; TYPE: PRT
; ORGANISM: Homo sapiens
US-09-371-347A-2

Alignment Scores:

Pred. No.: 1.7e-66 Length: 698
Score: 3613.00 Matches: 697
Percent Similarity: 99.86% Conservative: 0
Best Local Similarity: 99.86% Mismatches: 1
Query Match: 95.89% Indels: 0
DB: 1 Gaps: 0

us-09-371-347a-43 (1-2097) x US-09-371-347A-2 (1-698)

OY	1	ATGAGAGGTTTCTTACTATATGCTACACAGGAGGACAGGAAGCCATCGACAGAA	60
DB	1	Metatgagagpheluleuleutyralathrcinlmglyginalalyalalelalelu	20
OY	61	GAATGTGTGACAGCTGTGTGATCATGATTTTTCGACATTTCTACTATATTAGTCAA	120
DB	21	Glumetcyssuglinalalvalalvalhlselyheserelalaeprleuhtscyllleserclu	40

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QY 121 TCCGATAGTATGACCTAAAAACCGAAGACCTCCTCTGTTGTTGTTGTTTACACG 180
Db 41 SerAspLysTyrAbpLeuLysThrGluThrAlaProLeuValValValSerThrThr 60
QY 181 GGACCGGAGAGACCCGACGACAGCCGCAAGTTTGTAAAGAAATACAGAACCAACA 240
Db 61 GlyThrGlyAspProPheThrAlaArgLysPheValLysGluIleGlnAsnGlnThr 80
QY 241 CTGGCGGTGATTTCTTGTGCACCTGGGTAAGGTTACTGGGTCTCGGATTCAGAA 300
Db 81 LeuProValAspPhePheAlaHisLeuArgTyrGlyLeuLeuGlyLeuGlyAspSerGlu 100
QY 301 TACACCTACTTTTTCATAGGGGGAGAGATAATGATTAACGACTTCAAGAGCTTGAGCC 360
Db 101 TyrThrTyrPheCysAsnGlyGlyLysIleLeuAspLysArgLeuGlnGluGlyAla 120
QY 361 CGGCAATTTCTATGACACTGACATGACATGACTGTGTAGGTTTAAACCTTGCTGAG 420
Db 121 ArgHisPheTyrAspThrGlnHisAlaAspAspCysValGlyLeuGluLeuValGlu 140
QY 421 CCGGAGATGCTGAGCTGCGGACCCCTGAGAAAGATTTAGTCAAGAGAGACAA 480
Db 141 ProTyrIleAsnGlyLeuTyrProAlaLeuArgLysHisPheArgSerArgGlyGln 160
QY 481 GAGAGATTAAGTGGCGGACCTCCGCTGGCATCACCTGCATCTTGAGAGACAGACCTTGTG 540
Db 161 GluGluIleSerGlyAlaLeuProValAlaSerProAlaSerLeuAlaGlnThrAspLeuVal 180
QY 541 AAGTCAGAGCTGCTACACATTTGAATTCGAAAGTGCAGCTTCTGAGATTCGATTCAGGA 600
Db 181 LysSerGluLeuLeuHisIleGlnSerGlnValGluLeuLeuArgPheAspSerGly 200
QY 601 AGAAGAGATTTCTGAGTTTGAAGCAAAATGACAGTGAAGACAGCAATCCAAATGTTGTA 660
Db 201 ArgLysAspSerGluValLeuLysGlnAsnAlaValAsnSerAsnGlnSerAsnVal 220
QY 661 ATTGAAGACTTGAAGCTCCTACCTTACCCTGTCGGTACCCGACCTGCACAAAGCTCTCTG 720
Db 221 IleGluAspPheGlnSerSerLeuThrArgSerValProProLeuSerGlnAlaSerLeu 240
QY 721 AATATTCCTGTTTACCCCGAATATTTTACAGGTACATTCGACGAGAGTCTTGGCCAG 780
Db 241 AsnIleProGlyLeuProProGluTyrLeuGlnValHisLeuGlnGlnSerLeuGlyGln 260
QY 781 GAGGAAGCCCAAGATCTGAGCTTTCAGAGATCCAGTTTTCAGAGCCCAATTCAGAG 840
Db 261 GluGluSerGlnValSerValThrSerAlaAspProValPheGlnValProIleSerLys 280
QY 841 GCAATTCACCTTACTACGAATGATGCATTAACCACTGCTGTGATGAATTTGACAT 900
Db 281 AlaValGlnLeuThrThrAsnAspAlaIleLysThrThrLeuLeuValGluLeuAspIle 300
QY 901 TCAAATACAGACTTTTCTATACGCTCGAGATGCTTCAGCGGATCTGCGCTTAACAGT 960
Db 301 SerAsnThrAspPheSerTyrGlnProGlyAspAlaPheSerValIleCysProAsnSer 320
QY 961 GATTCTGAGTACAAAGCTTACTCCAAAGACTGACGCTTGAAGATTAAGAGAGACAGCTGC 1020
Db 321 AspSerGluValGlnSerLeuLeuGlnArgLeuGlnLeuGlnAspLysArgGluHisCys 340
QY 1021 GTCTTTTGAATTAAGGACAGACAAAGAAAGAGAGCTTACCCGACATATA 1080
Db 341 ValLeuLeuLysIleLysAlaAspThrLysLysGlyAlaThrLeuProGlnHisIle 360
QY 1081 CTTGGCGGAGTGTCTTCCAGTTTATTTTATCTGCTGTCTTGAATTCGAGCAATTCCT 1140
Db 361 ProIleGlyCysSerLeuGlnPheIlePheThrTyrCysLeuGluIleArgAlaIlePro 380
QY 1141 AAAAAGCATTTTGGACGCTTGTGATATACAGTGCACATGCTGGAAGAGCGAGG 1200
Db 381 LysLysAlaPheLeuAlaGlyAlaLeuValAspLysThrSerAspSerAlaGluLysArgArg 400
QY 1201 CTACAGAGAGCTGTGCACTTAACAAAGGGGACGCGATTAATAGCCGCTTTGTACGAGATGCC 1260
```

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Db 401 LeuGlnIleLeuCysSerLysGlnGlyAlaAlaAspTyrSerArgPheValArgAspAla 420
QY 1261 TGTGCTGCTGTTTGGATCTTCCTCTGCTTTCCTTCCCTTCCGACGACCACTACGCTC 1320
Db 421 CysAlaCysLeuLeuAspLeuLeuAlaPheProSerCysGlnProProLeuSerLeu 440
QY 1321 CTGCTGACATCTTCTTAACCTTCAACCCGACCAATTCGTGTGACAGCTCAAGTTTA 1380
Db 441 LeuLeuGlnHisLeuProLysLeuGlnProArgProTyrSerCysAlaSerSerLeu 460
QY 1381 TTTCACCCAGAAAGCTCCATTTTGTCTTCAACATTTGGAATTTCTGTACTGCCACA 1440
Db 461 PheHisProGlyLysLeuHisPheValPheAsnIleValGluPheLeuSerThrAlaThr 480
QY 1441 ACAGAGTCTGCGGAGGAGATATGACAGGCTGCTGCTGCTGCTGCTGCTGCTGCTGCT 1500
Db 481 ThrGluValLeuArgLysGlyValCysThrGlyTyrPheAlaLeuLeuValAlaSerVal 500
QY 1501 CTTGACGCAACATACATGATCCCATGAGAGACAGCGGAAAGCCCTGCTCTTAAGATA 1560
Db 501 LeuGlnProAsnIleHisAlaSerHisGluAspSerGlyLysAlaLeuAlaProLysIle 520
QY 1561 TCCATCTCTCTCGAACACAAATCTTTTCCACTTACCAATGACATGCCCTCAATCCCATC 1620
Db 521 SerIleSerProArgThrThrAsnSerPheHisLeuProAspAspProSerIleProIle 540
QY 1621 ATATAGTGGGTCCAGGACCGGATGACCCCGCTTATTTGGGTTCCCTACAACTAGAGAG 1680
Db 541 IleLeuValGlyProGlyThrGlyIleAlaProPheIleGlyPheLeuGlnHisArgGlu 560
QY 1681 AAATCCAAAGACCAACACCCGAGATGGAATTTTGAAGCAATGTGTGTTTGTGGCTGC 1740
Db 561 LysLeuGlnGlnGlnHisProAspGlyAsnPheGlyAlaIleMetIlePheLeuPheGlyCys 580
QY 1741 AGGCATTAAGATTAAGGATTTATTTATTCAGAAAGAGCTCAGACATTTCTTAAAGCATGG 1800
Db 581 ArgHisLysAspArgAspTyrLeuPheArgLysGluLeuArgHisPheLeuLysHisArgIle 600
QY 1801 ATCTTAATCATCTTAAGGTTTCTCTCTCAAGAGATGCTCTGTGGGGAGGAGAGAGCC 1860
Db 601 IleLeuThrHisLeuLysValSerPheSerArgAspAlaProValGlyGluGlnGluAla 620
QY 1861 CCAGCAAGTATGATGACAGACCAACATCCAGCTTCATGCGCAGAGAGTGGCGAGATCTC 1920
Db 621 ProAlaLysTyrValGlnAspAsnIleGlnLeuHisGlyGlnGlnValAlaArgIleLeu 640
QY 1921 CTCCAGGAGAACGGCCATATTTATGTGTGTGAGATGCCAAAGATATGCGCAAGATGTA 1980
Db 641 LeuGlnGlnAsnGlnHisIleTyrValCysGlyAspAlaLysAsnMetAlaLysAspVal 660
QY 1981 CATGATGCCCTGTGCAAAATATTAAGCAAGAGAGTGGAGTTGAAATACTAGAAAGCATG 2040
Db 661 HisAspAlaLeuValGlnIleIleSerLysGluValGlyAlaGluLysLeuGluAlaMet 680
QY 2041 AAAAAGCTGCGCACTTTAAAGAAAGAAAGAGCTACCTTCAGATATTTGTGCA 2094
Db 681 LysThrLeuAlaThrLeuLysGluGluLysArgTyrLeuGlnAspIleTyrSer 698

RESULT 2
US-09-371-347A-21
: Sequence 21, Application US/09371347A
: GENERAL INFORMATION:
: APPLICANT: Rozen, Roy A.
: APPLICANT: Leclerc, Daniel
: APPLICANT: Watson, Aaron
: APPLICANT: Rosenblatt, David
: TITLE OF INVENTION: HUMAN METHANONE SYNTHASE REDUCTASE:
: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
: TITLE OF INVENTION: DEFECTS, CARDIOVASCULAR DISEASE, AND CANCER
: FILE REFERENCE: 50004/003003
: CURRENT APPLICATION NUMBER: US/09/371,347A
```



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QY 1861 CCAGCAAGATGATGACACAGACATCCAGCTTCATGAGCCAGAGTGGCGAATCTC 1920
Db 621 ProAlaIysTyrValIGlnAspAsnIleGlnMetIsgIysGlnValAlaIysIleu 640
QY 1921 CTCGAGAGAAAGCGCCATATTATGATGAGATGAGATGCAAGAAATATGCGCAAGATGTA 1980
Db 641 LeuGlnGlnAenGlyHisIleTyrValCysGlyAspAlaIysAsnMetAlaIysAspVal 660
QY 1981 CATATATCCCTTGTGCAAAATTAATAGCAAAAGGTGGAGTGTGAAAAAATGAAAGCATG 2040
Db 661 HisAspAlaLeuValIGlnIleIleSerIysGlnValIGlyValIGlyLysLeuGlnAlaMet 680
QY 2041 AAAACCTGGCCACTTTTAAAAAGAGAAAAAGCTACCTTCAGATATTGGTCA 2094
Db 681 LysThrLeuAlaThrLeuLysGlnIulysArgTyrLeuGlnAspIleTyrSer 698

RESULT 3
US-09-371-347A-44
; Sequence 44, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A.
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; TITLE OF INVENTION: DEFECTS, CARDIOVASCULAR DISEASE, AND CANCER
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; PRIOR FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 44
; LENGTH: 698
; TYPE: PRF
; ORGANISM: Homo sapiens
US-09-371-347A-44

Alignment Scores:
Pred. No.: 1,7e-66 Length: 698
Score: 3613.00 Matches: 697
Percent Similarity: 99.86% Conservative: 0
Best Local Similarity: 99.86% Mismatches: 1
Query Match: 95.89% Indels: 0
DB: Gaps: 0

us-09-371-347a-43 (1-2097) x US-09-371-347A-44 (1-698)
QY 1 ATGAGAGAGTTCTGTTACTATATGCTAACAGAGGAGGACAGGAAAGCCATGACAGAA 60
Db 1 MetArgTrgPheLeuLeuLeuTyrAlaThrGlnGlnGlnIalValAlaIleGlu 20
QY 61 GAATATGCTGAGCAAGCTGTGTGATCATGAGATTTCTGCAATCTTCACTATATTAGGAA 120
Db 21 GlnMetCysGlnGlnIalValAlaIleGlyPheSerAlaAspLeuHisThrIleSerGlu 40
QY 121 TCCGATAGTATGACCTTAAAAACGAAACAGCTCTCTGTTGTTGTTGTTCTACACAG 180
Db 41 SerAspIysTyrAspLeuLysThrGlnThrAlaProLeuValIalValaSerThrThr 60
QY 181 GGCACCGAGAACCCAGCCGACACAGCCCGCAAGTTTGTAAAGAAATPACAGAACCAACA 240
Db 61 GlyThrIlyAspProAspThrAlaArgLysPheValLysGlnIleGlnAsnGlnThr 80
QY 241 CTGCGGATGATTTCTTGTCTCAGCTGCGTAAAGGATGAGGATCGGATTCAGATTCAGAA 300
Db 81 LeuProValAspPhePheAlaHisLeuArgTyrGlyLeuLeuGlyLeuGlyAspSerGlu 100
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QY 301 TACACTACTTTTGAATGGGAGGAGAGATAATTGATTAACGACTTCAAGAGCTTGGAGCC 360
Db 101 TyrThrTyrPheCysAsnGlyGlyLysIleIleAspLysArgLeuGlnIulLeuGlyAla 120
QY 361 CGGATTTCTATGACACTGACATGCAGATGACTGTGTAGCTTTAGAACTTGTGTGAG 420
Db 121 ArgHisPheTyrAspThrGlnGlyHisIleAlaAspAspCysValGlyLeuGlnIulValGlu 140
QY 421 CCGTGATTCCTGACCTCTGCGCCAGCCCTCAGAAAGCATTTTGGTCAACAGAGCAA 480
Db 141 ProTrpIleAlaGlyLeuTyrProAlaLeuArgLysHisPheArgSerSerArgGlyGln 160
QY 481 GAGGAGATTAAGTGGCGCAGCTCCGCTGGCATCACTTCGATCTTGAAGACAGACCTTGTG 540
Db 161 GlnIulIleSerGlyAlaAlaProValAlaSerProAlaSerLeuMetArgThrAspLeuVal 180
QY 541 AAGTCAGAGCTGTACACTGATTAATCTCAAGTCGAGCTTCTGAGATTGATGATTCAGGA 600
Db 181 LysSerGlnLeuLeuHisIleGlnSerGlnValIGlnLeuLeuArgPheAspAspSerGly 200
QY 601 AGAAGAGATTTCTGAGCTTTTGAAGCAAAATGCAGTGAACAGCAACCAATCCATGTTGTA 660
Db 201 ArgLysAspSerGlnValLeuLysGlnAsnAlaValaAsnSerAsnGlnSerAsnValVal 220
QY 661 ATTGAAGACTTGAAGTCCGACTTACCCGTTCCGTAACCCCACTTCACAGCCTCTCTG 720
Db 221 IleGlnAspPheGlnSerSerLeuThrArgSerValProIleuSerGlnAlaSerLeu 240
QY 721 AATATTCCTGATTTACCCCAAGAAATTTAAGATACATCTGACGAGACTCTTGGCCAG 780
Db 241 AsnIleProGlyLeuProProGlnTyrLeuGlnIalHisLeuGlnGlnSerLeuGlyGln 260
QY 781 GAGGAAAGCAAGATATGATGACTTCAGACGATCCAGTTTTCAGGCAATTTCAAG 840
Db 261 GlnGlnSerGlnValSerValIlnSerAlaAspProValaPheGlnValProIleSerLys 280
QY 841 GCAGTTCAACTTACTACGAATGATGCCATAAAAACACTGCTGTGTAGATTTGACATT 900
Db 281 AlaValGlnLeuThrThrAsnAspAlaIleIleYThrIleLeuValGlnLeuAspIle 300
QY 901 TCAATATCAGACTTTTCTTACGCTGAGAGATGCTTACGCGTATCTGCCCTACAGT 960
Db 301 SerAsnThrAspPheSerTyrGlnProGlyAspAlaPheSerValIleCysProAsnSer 320
QY 961 GATTTCGAGGTACAAAGCTTACTCCAAAGCTCGAGCTTGAAGTAAAGAGCACTGC 1020
Db 321 AspSerGlnValGlnSerLeuLeuGlnArgLeuGlnLeuGlnAspLysArgGlnHisCys 340
QY 1021 GTCTTTTGAATAAAGGAGACACAAAGAAAGAGACTTACCCCAAGCATATA 1080
Db 341 ValLeuLeuLysIleLysAlaAspThrLysLysLysLysLysAlaThrLeuProGlnHisIle 360
QY 1081 CTGCGGGAGATTTCTCTCAGATTCAATTTTAACTCGTGTGTTGAAATCCAGCAATTCCT 1140
Db 361 ProAlaGlyCysSerLeuGlnPheIlePheThrTyrCysLeuGlnIleAlaGlnAlaIlePro 380
QY 1141 AAAAAGGCAATTTTGGAGGCCCTGTGGAATATACAGTACAGTGTGAAAAAGCGCAG 1200
Db 381 LysLysAlaPheLeuAlaGlnAlaLeuValaAspTyrThrSerAspSerAlaGlnLysArgArg 400
QY 1201 CTACAGAGCTGTGACGATTAACAAAGGGGAGCCGATTAATAGCCGTTTGTACAGATGCC 1260
Db 401 LeuGlnIulLeuCysSerLysGlnGlyAlaAlaAspTyrSerArgPheValaArgAspAla 420
QY 1261 TGTGCTGCTGTGTTGATCTCTCTCTGCTTTCCTTTCTTCCAGCAGCAGCACTCAGCTC 1320
Db 421 CysAlaCysLeuLeuAspLeuLeuLeuAlaPheProSerCysGlnProProLeuSerLeu 440
QY 1321 CTGCTGCAACATCTTCCCTAACTTCAACCCAGACCAATATTCGTGTGAGCTCAAGTTTA 1380
Db 441 LeuLeuGlnIulHisLeuProLysLeuGlnProArgProIlySerCysAlaSerSerLeu 460
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QY      1381 TTTCACCCAGGAAGCTTCATTTTGTCTTCAACATTTGGAATTTCTGTCTACTGCCACA 1440
      |||
Db      461 PheHisProGlyIyLysLeuHisPheValPheHisnIleValGluPheLeuSerThrAlaThr 480
QY      1441 ACAGAGGTTTCTGCGGAAGGAGATGTACAGCTGGCTGGCTTTGTTGTTCTTCAATT 1500
      |||
Db      481 ThrGluValLeuArgLysGlyValLysThrGlyIyPheuAlaLeuLeuValAlaSerVal 500
QY      1501 CTTCAGGCAACATACATTCATCCCATGAAAGACCGCGGAAGCCCTGGCTTCCTAAGTA 1560
      |||
Db      501 LeuInProAsnIleHisAlaSerHisGluAspSerGlyValAlaLeuAlaProLysIle 520
QY      1561 TCACATCTCTCTCGAACACAAATTTCTTCACATTACAGATGACCCCTCAATCCCATC 1620
      |||
Db      521 SerLeuSerProArgThrThrAsnSerPheHisLeuProAspProSerIleProIle 540
QY      1621 ATAATGTGGTGTCCAGGAACCGGCAATAGCCCGTTTATTTGGTTCTTCAACATAGAGAG 1680
      |||
Db      541 IleMetValGlyProGlyThrGlyIleAlaProPheIleGlyPheLeuGlnHisArgGlu 560
QY      1681 AAATCCCAAGAACACACCCAGATGGAATTTTGGAGCAATGTGGTTGTTTGGCTGC 1740
      |||
Db      561 LysLeuGlnGluGlnHisProAspGlyAsnDheGlyAlaMetTrpLeuPhePheGlyCys 580
QY      1741 AGCATATAGATAGATGATATCTATTCAGAAAGAGCTCAGACATTTCTTAAGCATGGG 1800
      |||
Db      581 ArgHisLysAspAlaGlySerTrpLeuPheArgLysGluLeuArgHisPheLeuLysHisGly 600
QY      1801 ATCTTAATCTCATTAAGGTTTCTTCTCAAGAGATGCTCTGTGGGAGAGAGAACCC 1860
      |||
Db      601 IleLeuThrHisLeuLysValSerPheSerArgAspAlaProValGlyGluGlnIleuAla 620
QY      1861 CCAGCAAGATGTATGACAGACACATCCAGCTTTCAGTGGCCAGCGTGGCCAGAAATCTC 1920
      |||
Db      621 ProAlaLysTrpValGlnAspAsnIleGlnLeuHisGlyGlnGlnValAlaArgIleLeu 640
QY      1921 CTCAGAGGAACGGCCATATTATGTGTGTGAGATGCAAGATATGATGCAAGATGTA 1980
      |||
Db      641 LeuGlnGlnLeuGlnHisIleTrpValLysGlyAspAlaLysAsnMetAlaLysAspVal 660
QY      1981 CATGATGCCCTTGTGCAATATATATAGCAAGAGTTGGAGTTGAAAACTAAGCAATG 2040
      |||
Db      661 HisAspAlaLeuValGlnIleIleSerLysGlnValGlyValGluLysLeuGlnAlaMet 680
QY      2041 AAAACCTGGCCACTTTTAAAGAAAGAAAGCTTACCTTCAGATATTTGGTCA 2094
      |||
Db      681 LysThrLeuAlaThrLeuLysGlnGluLysArgTrpLeuGlnAspIleTrpSer 698

RESULT 4
US-09-371-347A-42
: Sequence 42, Application US/09371347A
: GENERAL INFORMATION:
: APPLICANT: Gravel, Roy A,
: APPLICANT: Rozen, Rima
: APPLICANT: Leclerc, Daniel
: APPLICANT: Wilson, Aaron
: APPLICANT: Rosenblatt, David
: TITLE OF INVENTION: HUMAN MENTIONINE SYNTHASE REDUCTASE:
: TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
: TITLE OF INVENTION: DEFECTS, CARDIOVASCULAR DISEASE, AND CANCER
: FILE REFERENCE: 50004/003003
: CURRENT APPLICATION NUMBER: US/09/371,347A
: PRIOR FILING DATE: 1999-08-10
: PRIOR APPLICATION NUMBER: 09/232,028
: PRIOR FILING DATE: 1999-01-15
: PRIOR APPLICATION NUMBER: 60/071,622
: PRIOR FILING DATE: 1998-01-16
: NUMBER OF SEQ ID NOS: 61
: SOFTWARE: FastSeq for Windows Version 4.0
: SEQ ID NO 42
: LENGTH: 698
: TYPE: PRT
: ORGANISM: Homo sapiens

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US-09-371-347A-42
Alignment Scores:
Pred. No.: 2,02e-66 Length: 698
Score: 3609.00 Matches: 696
Percent Similarity: 99.86% Conservative: 1
Best Local Similarity: 99.71% Mismatches: 0
Query Match: 95.78% Indels: 1
DB: 1 Gaps: 0

us-09-371-347a-43 (1-2097) x US-09-371-347A-42 (1-698)
QY      1 ATGAGAGGTTTCTGTACTATATGCTTACACAGAGGAGACAGCAAGCCATCGCAGAA 60
      |||
Db      1 MetArgArgPheLeuLeuLeuLysTrpAlaThrGlnGlnGlyGlnAlaLysAlaIleGlu 20
QY      61 GAAATGTGTGACAGCTGTGTACATGATTTTCTGCAATCTTCAATCTTCAATGAA 120
      |||
Db      21 GluIleCysGlnGlnAlaValHisGlyPheSerHisAspLeuHisCysIleSerGlu 40
QY      121 TCAGATATAGATGACCTTAAACCGGAACAGCTCTTGTGTGTGTGTCTTACACAG 180
      |||
Db      41 SerAspLysTrpAspLeuLysTrpGlnThrAlaProLeuValValValSerThrThr 60
QY      181 GGACACCGAGACCCACCCGACACAGCCGCAAGTTTGTAAAGAAATACAGAACCAACA 240
      |||
Db      61 GlyThrGlyAspProProAspThrAlaArgLysPheValLysGlnIleGlnAsnGlnThr 80
QY      241 CTGCGGTGATTTCTTGTCTCACCTCGGATGTGGTTACTGGGTCTCGGTGATTCAGA 300
      |||
Db      81 LeuProValAspPhePheAlaHisLeuArgTrpIleLeuLeuGlyLeuGlyAspSerGlu 100
QY      301 TACACCTACTTTTGCATGGGGGGGAGATTAATGATTAAGACTTCAAGACTTGGAGCC 360
      |||
Db      101 TyrThrTrpPheCysAsnGlyGlyLysIleIleLysPysArgLeuGlnGlyAla 120
QY      361 CGGATTTCTATGACACTGTGACATGACATGACATCTGTAGATTGAACTTGTGTGAG 420
      |||
Db      121 ArgHisPheTrpAspThrGlnHisAlaAspAspCysValGlyLeuGlnLeuValValGlu 140
QY      421 CCGTGAATGTGTGACTCTGTGCGCCAGCCCTCAGAAAGATTTTAGGTCAAGAGAGCA 480
      |||
Db      141 ProTrpIleAlaGlyLeuTrpProAlaLeuArgLysHisPheArgSerArgGlyGln 160
QY      481 GAGGAGATTAAGTGGCGGACCTCCGCTGCATCACCTGCATCTTGAAGAGACAGCTTGTG 540
      |||
Db      161 GluIleLysSerGlyAlaLeuProValAlaSerProAlaSerLeuAspGlnAspLeuVal 180
QY      541 AAGTCAGAGCTGTACACATTTGAATCTCAAGTCGAGCTTCTGAGATTGATTCAGGA 600
      |||
Db      181 LysSerGlnLeuLeuHisIleGlnSerGlnValGlnLeuLeuArgPheAspAspSerGly 200
QY      601 AGAAGAGATTTGAGGTTTGTAGACCAAAATGACAGTGAACAGCAACCAATCCATGTTGTA 660
      |||
Db      201 ArgLysAspSerGlnValLeuLysGlnAsnAlaValAsnSerAsnGlnSerAsnValVal 220
QY      661 ATGGAAGCTTTGAGTCTTCACTTACCCCTGCTTACCCCACTCTCACAAGCCCTCTG 720
      |||
Db      221 IleGlnAspPheGlnSerLeuThrArgSerValProProLeuSerGlnAlaSerLeu 240
QY      721 AATATCTGTGTATACCCCGCAATATTTACAGATATGACAGTGTCTTGTGGCAG 780
      |||
Db      241 AsnIleProGlyLeuProProGlnTrpLysGlnValHisLysGlnGlnLysLeuGln 260
QY      781 GAGGAAAGCCAAAGTATGTGTACTTACAGACATCCAGTTTTCAGTGCCAAATTCAAAG 840
      |||
Db      261 GluGlnSerGlnValSerValThrSerAlaAspProValPheGlnValProIleSerLys 280
QY      841 GCAGTTCACTTACTTACAGATGATGACCAATAAAACCACTGCGGTGATGATGAGATTT 900
      |||
Db      281 AlaValGlnLeuThrThrAsnAspAlaIleLysThrThrLeuLeuValGlnLeuAspIle 300
QY      901 TCAATACAGACTTTCTTCTATCAGCTGAGATGCTTCAAGCTGATCTGCTTACAGAGT 960

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Db      141 ProTribLeaIaGlyLeuTriProAlaLeuArgLysHisPheArgSerArgGlyGln 160
Qy      481 GAGAGTAAGTGGCGGACCTCCGGTGGACATCACCTGATCCTTGAGAGACAGACTTGTG 540
Db      161 GUGGUGLISERGLYALaLeuProValAlaSerProAlaSerLeuAlaGlnAspLeuVal 180
Qy      541 AAGTCAGAGCTGTACACATTTGAATTCAGAGTTCAGAGTTCGATTCGATTCAGAGA 600
Db      181 LysSerLLeuLeuHisLleGlnSerGlnValGlnLeuLeuArgPheAspSerGly 200
Qy      601 AGAAAGATTCAGAGTTTGAAGCAAAATGACAGTGAACGAAACCAATCCATGTTGTA 660
Db      201 ArgLysAspSerGlnValLeuLysGlnAspAlaValAsnSerAsnGlnSerAspVal 220
Qy      661 ATTGAACATTTGAGTCTCACTTACCCGTTGGTACCCCACTCCACAGCCTCTCTG 720
Db      221 LLeuLysPheGlnSerSerLeuThrArgSerValProProLeuSerGlnAlaSerLeu 240
Qy      721 AATATCTGTGTTACCCCGCAATATTTACAGGTACATGACAGAGTCTCTGGCCAG 780
Db      241 AsnLLeuProGlnLeuProProGlnLysLeuGlnValHisLeuGlnLysLeuGln 260
Qy      781 GAGGAAGCCAAAGTATGTGTACTTCAGCAGATCCAGTTTCAAGTGCCTCAATTCAG 840
Db      261 GUGLysSerGlnValSerValThrSerAlaAspProValPheGlnValProLleSerLys 280
Qy      841 GCAGTTCACTTACTAGGAATGAGCAATAAAACCACTCGCTGCTGAGATTCGACATT 900
Db      281 AlaValGlnLeuThrThrAsnAspAlaLleLysThrThrLeuLeuValGlnLeuAspLle 300
Qy      901 TCAAAATCAGACCTTTCTCTACAGCTGAGAGATCCTTCAGCCTGATCTGCTCAACAGT 960
Db      301 SerAsnThrAspSerSerLysGlnProGlnLysAlaPheSerValLleCysProAsnSer 320
Qy      961 GATTCTGAGGTACAAAGCTTATCTCCAAAGACTGTGAGATTAAGATAAAGAGACACTGC 1020
Db      321 AspSerGlnValGlnSerLeuLeuGlnArgLeuGlnLysAspLysArgGlnLys 340
Qy      1021 GTCTTTTGAATAAAGGCGACACAAAGAAAGAGAGTACTTACCCACACATTA 1080
Db      341 ValLeuLeuLysLleLysAlaAspThrLysLysGlnLysAlaThrLeuProGlnHisLle 360
Qy      1081 CTTGCGGAGTCTTCTCCAGATTCATTTTCTGAGTCTGAGTCTGAAATCCGCAATTCCT 1140
Db      361 ProAlaLysSerLeuGlnPheLlePheThrTrpCysLeuGlnLleArgAllePro 380
Qy      1141 AAAAAGCATTTTTCGAGCCCTTGTGACTATACAGTGAACAGTGTGAAAAGCGCAG 1200
Db      381 LysLysAlaPheLeuArgAlaLeuValAspLysThrSerAspSerAlaGlnLysArg 400
Qy      1201 CTACAGAGCTGTGACAGTAAACAAAGGGGACCGCATTAATGACCCGCTTTGTCAGATGCC 1260
Db      401 LeuGlnGlnLeuLysSerLysGlnGlnLysAlaAspLysArgPheValArgAspAla 420
Qy      1261 TGGGCTGCTGTGATCTCTCTGCTCTGCTTCCCTTTCGCGACCACTAGCTC 1320
Db      421 CysAlaCysLeuLeuAspLeuLeuLeuAlaPheProSerCysGlnProProLeuSerLeu 440
Qy      1321 CTGCTCGAACAATCTTCTTAACCTTCAACCCAGACCATATTTGTGTGCAAGCTCAAGTTTA 1380
Db      441 LeuLeuGlnHisLeuProLysLeuGlnProArgProLysSerCysAlaSerSerLeu 460
Qy      1381 TTTTACCCAGAGAAAGCTTCATTTTGTCTTCAACATTTGTGGAATTTGTCTTACCTGCCA 1440
Db      461 PheHisProGlnLysLeuHisPheValPheAsnLleValGlnPheLeuSerThrAlaThr 480
Qy      1441 ACAAGGTTCTGGGAGGAGAGTATGTACAGAGCTGGGCTGCTGTTGGTCTTCAAGT 1500
Db      481 ThrGlnValLeuArgLysGlnLysAlaCysThrGlnLysLeuAlaLeuLeuValAlaSerVal 500
Qy      1501 CTTGAGCCAAACATACATGATCCATGATGAGACAGCGGAAAGCCCTGCTCTTAAGATA 1560
Db      501 LeuGlnProAsnLleHisAlaSerHisGlnLysSerGlnLysAlaLeuAlaProLysLle 520

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Qy      1561 TCCATCTCTCTCGAACCAACAATTTCTTCCACTTACAGATGACCCCTCAATCCCATC 1620
Db      521 SerLleSerProAlaGlnThrThrAsnSerPheHisLeuProAspAspProSerLleProLle 540
Qy      1621 ATTAATGGTGGGTCCAGAGAACCCGGCATBGCCTTTTATTTGGGTTCTTACCAATGAGAG 1680
Db      541 LLeuValGlnProGlnLysThrGlnLysAlaProPheLleGlnPheLeuGlnHisArgGln 560
Qy      1681 AAATCCCAAGAACCAACCCAGATGGAATTTTGGAGCAATGAGTGTGTTTGGTGGCTGC 1740
Db      561 LysLeuGlnGlnGlnHisProAspGlnAspPheGlnAlaMetTrp---PhePheGlnCys 579
Qy      1741 AGGCATTAAGATAGGATTAATCTTATTCAGAAAAGAGCTCAGACATTTCTTAAGCATGG 1800
Db      580 ArgHisLysAspArgLysArgLysLeuPheArgLysGlnLeuArgHisPheLeuLysHisGly 599
Qy      1801 ATCTTAATCATCTTAAGGTTTCTCTCTCTCAAGAGATCCTCTGTTGGGAGAGAGAAACC 1860
Db      600 LLeuThrHisLeuLysValSerPheSerArgAspAlaProValGlnGlnGlnLysAla 619
Qy      1861 CCAAGCAAGTATGTACAAAGCAACATCCAGCTTCAATGCCAGAGGTGGGAGAAATCTCTC 1920
Db      620 ProAlaLysTyrValGlnAspAsnLleGlnLeuHisGlnGlnGlnValAlaArgLysLeu 639
Qy      1921 CTCAGAGAGAACGGCCATATTTATGTTGTGAGAGATCAAAAGATATGAGCAAGATGTA 1980
Db      640 LeuGlnGlnLysGlnLysLleLysLysLysLysLysLysLysLysLysLysLysLys 659
Qy      1981 CATGATCCCTTGTGCAATTAATTAAGCAAAAGAGGTGAGTGTGAAAATCTTAAGCAATG 2040
Db      660 HisAspAlaLeuValGlnLleLleSerLysGlnValGlnLysLysLysLysLysLys 679
Qy      2041 AAAACCTGGCCACTTTTAAAGAAAGAAAGCTTCAAGTATTTGTC 2094
Db      680 LysThrLeuAlaThrLeuLysGlnLysArgLysArgLysLeuGlnAspLleTrpSer 697

RESULT 6
US-09-371-347A-48
: Sequence 48, Application US/09371347A
: GENERAL INFORMATION:
: APPLICANT: Gravel, Roy A.
: APPLICANT: Rozen, Rima
: APPLICANT: Leclerc, Daniel
: APPLICANT: Wilson, Aaron
: APPLICANT: Rosendiat, David
: TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
: TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
: FILE REFERENCE: 50004/003003
: CURRENT APPLICATION NUMBER: US/09/371.347A
: PRIOR FILING DATE: 1999-08-10
: PRIOR APPLICATION NUMBER: 09/232,028
: PRIOR FILING DATE: 1999-01-15
: PRIOR APPLICATION NUMBER: 60/071,622
: PRIOR FILING DATE: 1998-01-16
: NUMBER OF SEQ ID NOS: 61
: SOFTWARE: FastSeq for Windows Version 4.0
: SEQ ID NO 48
: LENGTH: 689
: TYPE: PRT
: ORGANISM: Homo sapiens
US-09-371-347A-48

Alignment Scores:
Pred. No.: 8.06e-64 Length: 689
Score: 3470.00 Matches: 686
Percent Similarity: 98.42% Conservative: 1
Best Local Similarity: 98.28% Mismatches: 2
Query Match: 92.09% Indels: 9
DB: 1 Gaps: 6

us-09-371-347a-43 (1-2097) x US-09-371-347A-48 (1-689)

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QY 4 AGGAGTTTCGTACTATATGCTACACAGAGGGAGCAAGGCAATGCGAAGAA 63
Db 1 ArgArgPheuleuleuleuYrAlaThGlnGlnGlnAlaValAlaIleGlnGln 20
QY 64 ATGTGTGAGCAAGCTGTGTGATCATGATTTTCTGCAGATCTTCACTATATTAGTAATCC 123
Db 21 MetCysGlnGlnAlaValAlaIleGlyPheSerAlaAspLeuHtScySileSerGlnSer 40
QY 124 GATAGATATGACCTTAAAAACCGAAACAGCTCTCTGTGTGTGGTTCACACAGGCG 183
Db 41 AspLysTrpAspLeuLysThrGlnThrAlaProLeuValAlaValIleSerThrThGly 60
QY 184 ACCGAGAGCCACCGCAGACAGCCGCGAGTTGTTAAGAAATACGAACCAACACTG 243
Db 61 ThrGlyAspProAspThrAlaArgLysPheValLysGlnIleGlnAsnGlnThrLeu 80
QY 244 CCGGTTGATTTCTTGTCTCAGCTCGGTATGGTTACTGGGTCTCGGTGATTCAGAAATAC 303
Db 81 ProValAspPhePheAlaHisLeuArgTrGlyLeuLeuGlyLeuGlyAspSerGlnTrp 100
QY 304 ACCTACTTTTGCATTTGGGGGAGATTAATTGATTAAGACTTCAAGAGCTTGGAGCCCG 363
Db 101 ThrTrpPheCysAsnGlyGlyLysIleIleAspLysArgLeuGlnLysGlyAlaArg 120
QY 364 CATTCTATGACACTGGACATGACATGACTGTGTAGGTTTGAACCTTGGTGGAGCCG 423
Db 121 HisPheTrpAspTrpGlyHisAlaAspAspCysValGlyLeuGlnLeuValAlaGlnPro 140
QY 424 TGGATTCGTGACTCTGGCCAGCCCTCAAGAAAGCATTTTAGTTCAGACAGACAAAG 483
Db 141 TrpIleAlaGlyLeuTrpProAlaLeuArgLysHisPheArgSerSerArgGlyGlnGln 160
QY 484 GAGTAAAGTGGCGGCACTCCGCGTGGCATCACCTGATCCTTGAGAGACAGACTTGTGAAG 543
Db 161 GlnIleSerGlyAlaLeuProValAlaSerProAlaSerLeuArgTrpAspLeuValLys 180
QY 544 TCAGAGCTGTACACATTTGAATCTCAAGTCAGACTTGTGAGATTCGATTCAGAGAA 603
Db 181 SerGlnLeuLeuHisIleGlnSerGlnValGlnLeuLeuArgPheAspAspSerGlyArg 200
QY 604 AAGGATTCAGAGTTTGAAGCAAAATGACAGTGAACCAACCAATCCATGTTGAATT 663
Db 201 LysAspSerGlnValLeuLysGlnAsnAlaValAsnSerAsnGlnSerAsnValIle 220
QY 664 GAAACCTTGAAGTCTTACCCGTTCCGTTACCCCACTCTCAAGCCTCTCTGAAT 723
Db 221 GlnAspPheGlnSerSerLeuThrArgSerValProProLeuSerGlnAlaSerLeuAsn 240
QY 724 ATTCTGTGTTTACCCCAATATTTTACAGGTATCATCTGCAGAGTCTCTTGGCCAGAG 783
Db 241 IleProGlyLeuProProGlnTrpLeuGlnValHisIleGlnGlnIleSerLeuGlyGlnGln 260
QY 784 GAAAGCAAGATATGTGACTTCAGCAGATCCAGTTTTCAGAGTTCAGCAATTTCAAGGCA 843
Db 261 GlnSerGlnValSerValIleThrSerAlaAspProValPheGlnValProIleSerLysAla 280
QY 844 GTTCAACTTCTAGAGTATGATGATCAATAAAAACACTGCTGTGTGAGATTTGGAATTTCA 903
Db 281 ValGlnLeuTrpTrpAsnAspAlaIleLysThrThrLeuLeuValGlnLeuAspIleSer 300
QY 904 AATACAGACTTTTCTTACAGCTCGAGATGCTTTCAGAGTGTCTCCCTTAACAGTAT 963
Db 301 AsnThrAspPheSerLysTrpGlnProGlyAspAlaPheSerValIleCysProAsnSerAsp 320
QY 964 TCTGAGGTACAAAGCTTACTCCAAAGACTGCAAGCTTGAAGATTAAGAGAGCACTGGTGC 1023
Db 321 SerGlnValGlnSerLeuGlnArgLeuGlnLeuGlnLysArgGlnHisCysVal 340
QY 1024 CTTTGAATAATTAAGGAGACACAAAGAAAGAGACTCTTACCCCGCATATACCT 1083
Db 341 LeuLeuLysIleLysAlaAspThrLysLysLysGlyAlaThrLeuProGlnHisIlePro 360

QY 1084 GCGGATGTCTCTCCAGTTCATTTTACCTGGGTCTTGAATCCGAGCAATTCCTAAA 1143
Db 361 AlaGlyCysSerLeuGlnPheIlePheThrTrpCysLeuGlnIleArgAlaIleProLys 380
QY 1144 AAGGATTTTTCGAGCCCTTGTGTGACTATATACAGTACAGTGTCTGAAAAAGCGAGCTTA 1203
Db 381 LysAlaPheLeuArgAlaLeuValAspTrpThrSerAspSerAlaGlnLysArgArgLeu 400
QY 1204 CAGAGAGTGTGAGTAAACAAGGGGCGCCGATATATGACCGCTTGTGACAGATGCCGT 1263
Db 401 GlnGlnLeuCysSerLysGlnGlyAlaAlaAspTrpSerArgPheValArgAspAlaCys 420
QY 1264 GCCGTCTTGTGATCTCTCTCTGCTTCTTCCCTTCTTCCAGCCACCACTCAGTCTCTG 1323
Db 421 AlaCysLeuLeuAspLeuLeuLeuAlaPheProSerCysGlnProProLeuSerLeuLeu 440
QY 1324 CTCGACATTTTCTTAACTTCAACCCAGACATATTCGTGTGACAGCTCAAGTTATTT 1383
Db 441 LeuGlnHisLeuProLysLeuGlnProArgProLysSerCysAlaSerSerLeuPhe 460
QY 1384 CACCCAGGAAGCTCCATTTTGTCTTCAACATTTGTGGAATTTCTGTCTACTGCGACACA 1443
Db 461 HisProGlyLysLeuHisPheValPheAsnIleValGlnPheLeuSerThrAlaThr 480
QY 1444 GAGGTCTGCGAAGGAGATATGTACAGGCTGGCTGCTTGTGTGCTTCAAGTTCTT 1503
Db 481 GlnValLeuArgLysGlyValCysThrGlyTrpLeuAlaLeuLeuValAlaSerValLeu 500
QY 1504 CAGCCAAACATPACATGATCCCATGAAAGACAGCGGAAAGCCTGCTCTTAAGATTC 1563
Db 501 GlnProAsnIleHisAlaSerHisGlnAspSerGlyLysAlaLeuAlaProLysIleSer 520
QY 1564 ATCTCTCTCGAACAACAATTTCTTCCATTTACAGATGACCCCTCAATCCCATGATA 1623
Db 521 IleSerProArgTrpTrpAsnSerPheHisLeuProAspAspProSerIleProIle 540
QY 1624 ATGTGGGTCCAGAAACCGCATAGCCCGTTTATTTGGTTCCTTACAATAGAGAAA 1683
Db 541 MetValGlyProGlnTrpGlyIleAlaProPheIleGlyPheLeuGlnHis----ArgAs 559
QY 1684 CTCCAAGAACAAACCCAGATGGAATTTTGGAGCAATGTGTGTTTGGTCTGAGAG 1743
Db 559 nSerLysAsnAsnThrGlnMetGlnIleLeuGlnGlnCysGlyCysPheLeuAlaIle 579
QY 1744 CATPAGATATGGGATTTATCTTATTCAGAAAAGAGCTCAGACATTTCTTAAAGATGGATC 1803
Db 579 YlleArgIleGlyIleIleTrpSerGlnLysSerSerAspIleSerLeuSerMetGlySe 599
QY 1804 TTAATCATCTAAAGTTTCTTCTCAAGAGATGCTCTGTGTGGGAGAGAAACCCCA 1863
Db 599 r-----LeuIleArgPheProSerGlnIleMetLeuLeuGlnYArgArgLysProG 617
QY 1864 GCAAAGTATGTACAGCAACATTCAGCTTCATGAGCCAGAGAGTGGGAGAAATCTCTCTC 1923
Db 617 ngInSerMetLysTrpThrTrpSerPheMetAlaSerArgTrpArgLysSerSerSe 637
QY 1924 CAGAGAACCGCCATATTTATGTGTGAGATGACAAAGAAATATGCGCAAGATGTACAT 1983
Db 637 rArgArgThrAlaIlePheMetCysValGlnMetGlnArgIleTrpProArgMetTrpMe 657
QY 1984 GATGCCCTTGTGCAATATATATAGCAAAAGAGTTGAGTTGAAAAAATGAAAGCAATGAAA 2043
Db 657 tMetProLeuCysLys-----AlaLysArgLeuGlnLeuLysAsn---LysGln---Ly 673
QY 2044 ACCCTGGCCACTTAAAGAAAGAAAGAAAGCTTACTTCAAGATATTGGTGTAT 2095
Db 673 sProTrpProLeu---LysLysLysAsnAlaThrPheArgIlePheGlyHis 689
RESULT 7
US-09-371-347A-22
; Sequence 22: Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A.

```

APPLICANT: Rozen, Rima
APPLICANT: Leclerc, Daniel
APPLICANT: Wilson, Aaron
APPLICANT: Rosenblatt, David
TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
TITLE OF INVENTION: DEFECTS, CARDIOVASCULAR DISEASE, AND CANCER
FILE REFERENCE: 50004/003003
CURRENT APPLICATION NUMBER: US/09/371,347A
CURRENT FILING DATE: 1999-08-10
PRIOR APPLICATION NUMBER: 09/232,028
PRIOR FILING DATE: 1999-01-15
PRIOR APPLICATION NUMBER: 60/071,622
PRIOR FILING DATE: 1998-01-16
NUMBER OF SEQ ID NOS: 61
SOFTWARE: FastSeq for Windows Version 4.0
SEQ ID NO 22
LENGTH: 682
TYPE: PRT
ORGANISM: Caenorhabditis elegans
US-09-371-347A-22

Alignment Scores:
Pred. No.: 4.62e-16 Length: 682
Score: 912.00 Matches: 236
Percent Similarity: 48.30% Conservative: 119
Best Local Similarity: 32.11% Mismatches: 288
Query Match: 24.20% Indels: 92
DB: 1 Gaps: 15

us-09-371-347a-43 (1-2097) x US-09-371-347A-22 (1-682)
QY 1 ATGAGAGAGTTCTGTTACTATGCTACAGACAGGAGCGAAGCCATGCCAGAA 60
DB 1 MetThraspPheLeuIleAlaPheGlySerGlnThrGlnAlaGlnThrIleAlaLys 20
QY 61 GAATGTGTGACAGAGCTGTGATCATGATTTCTGAGATCTTCACTATATTAGTAA 120
DB 21 SerLeuLysGlnLysAlaGlnLeuIleGlyLeuThrProAlaGlnLysAlaLeuAspGln 40
QY 121 TCCGATAGATGACCTTAAACCGAACAACCTCTCTGTTGTTGGTTTCTACACG 180
DB 41 AsnGlnLysLysPheAsnLeuAsnGlnLysLeuLysGlnAlaIleValIleSerThr 60
QY 181 GGCACCGGAGACCCACCGACAGCCCGCAAGTTTGTAAAGAAATACAGAACCAACA 240
DB 61 GlyAspGlyAspAlaProAspAsnCySAIaArgPheValaArgArgIleAsnArgAsnSer 80
QY 241 CTGCGCGGTGATTTCTTGTCTCACCTGCGGTATGGTTACTGGGCTCGGATTCAGAA 300
DB 81 LeuGlnAsnGlnLysLeuLysAsnLeuAspTyrValLeuLeuGlyLeuGlyAspSerAsn 100
QY 301 TACACTACTTTTTCATGAGGAGAGATTAATGATTAACACACTTCAAGACTTGCAGCC 360
DB 101 TySerSerTyrGlnThrIleProArgLysIleAspLysGlnLeuThrAlaLeuGlyAla 120
QY 361 CGGCACTTTATGACACTGACATGCAGATGACGTGTAGGTGTTAGAACTTGTGGTGG 420
DB 121 AsnArgLeuPheAspArgAlaGlnAlaAspAspGlnValaGlyLeuGlnLeuGlnValaGln 140
QY 421 CCGGAGATTTGCTGACACTGCGCAGCCCTCAGAAAGACTTTTAGGTCAAGCAGAGCAA 480
DB 141 ProTrpIleGlnLysPhePheAlaThrLeuAlaSerArgPheAspIleSerAlaAspLys 160
QY 481 GAGGAGATTAAGTGGCGCACTCCGAGTGCATCACCTGACCTTTCAGAGACAGACTTGTG 540
DB 161 MetAsn-----AlaIleThrGlnSerSerAsnLeuLysLeuAsnGlnVal 175
QY 541 AAGTCAGAG-----CTGCTACACATTGAATCTCAAGTCGAGCTTTCAGATTGCAT 591
DB 176 LysThrGlnGlnGlnLysLysAlaLeuLeuGlnLysArgIleGlnAspGlnGlnLysSer 195
QY 592 GATTGAGGAGAA----- 603

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DB 196 AspGlnLysArgGlyArgValIleGlyIleAspMetLeuIleProGlnIleIleTyrAspTyr 215
QY 604 AAGATTCTGAGATTGTTGAAGCAAAATGCAAGTGAACGCAACCAATCCATGTTGTAATT 663
DB 216 ProIleLysSerLeuLysGlySerGlnThrLeuSerAsnAspGlnAsnLeu----- 233
QY 664 GAAGACTTGTAGTCTCATTACCCGTTCCGTACC-----CCACTCTCAAA 711
DB 234 -----ArgValProIleAlaProGlnProPheIleVal 244
QY 712 GCCTCTCGAATATTCCTGGTTTACCCCA-----GAATATTTACAGTACAT 759
DB 245 SerSerValSerAsnArgLysLeuProGlnLysPheThrLysLeuGlnLysProGlnAsnLeu 264
QY 760 CTGACAGAGTCTCTGGCCACAGAGAAAGCAAGATATCTGACTTTCAGACGATCCAGTT 819
DB 265 LysMetProGlyValIleThrLysProPheGlnValLeuValIleSerIleGlnPheVal 284
QY 820 TTTCAGTGGCAATTTCAAGGCGAGTTCACCTTACGATGCAATGCAATGCAATGCAATGCA 879
DB 285 ThrAsp---ProPheSerLys-----LysIleLysThrLys 295
QY 880 CTGCTGTGAGAAATTTGACATTTCAAT-----ACAGACTTTTCTATCAAGCTGAGAT 933
DB 296 ArgMetIleThrValaAspPheGlyAspPheIleAlaIleGlnLeuGlnLysProGlyAsp 315
QY 934 GCCTTACAGCTGATCTCCCTTACAGATGATTTGAGGTACAAAGCTTCTCAAGAGATG 993
DB 316 AlaIleTyrPheCysValaProAsnProAlaLeuGlnValaAsnPheIleLeuLysArgCys 335
QY 994 CAGCTTGAAGTAAAGAGCACTGGGCTCTTTGAAATTAAGGACAGACAAAGAG 1053
DB 336 GlyValLeuAspIleAlaAspGlnGlnCysGlnLeuSerIleAsnProLysThrGlnLys 355
QY 1054 AAAGAGACTTCTTACCCACAGCATATCTCGGAGATGTTCTTCCAGTTTCAATTTTACC 1113
DB 356 IleAsnIleGlnIleProGlnLysIleValIleLysIleThrThrLeuAsnGlnMetPheThr 375
QY 1114 TGGTGTCTTGAATCCGAGCAATTTCTTAAAGAGCAATTTTGCAGCCCTTGTGACTAT 1173
DB 376 ThrCysLeuAspIleArgArgAlaProGlyArgProLeuIleArgValaIleAlaGlnSer 395
QY 1174 ACCGATGACAGTCTGTAAGCGGAGCTACAGAGCTGTGCAATTAACAAAGGGAGGCC 1233
DB 396 ThrSerAspProAsnGlnLysArgArgLeuLeuLysSerIleAlaGlnLysMetLys 415
QY 1234 GATTATAGCCGCTTTGTAGCAGATGCTGTGCTGTGTGATCTCTCTGCTTTC 1293
DB 416 AspPheThrAspPheValaArgThrProGlyLeuSerLeuAlaAspMetLeuPheAlaPhe 435
QY 1294 CTTTCTTGCAGCCACCACTGATCTCTGCTGCAACATTTCTTAACTTCAACCCAGA 1353
DB 436 ProAsnValLysProProValaAspArgLeuIleGlnLeuLeuProArgLeuIleProArg 455
QY 1354 CCAATTCGTGTGCAAGCTCAAGTTTATTCACCCAGAAAGCTCCATTTGTGCTTCAAC 1413
DB 456 ProTyrSerMetSerSer-----TyrGlnAsnArgLysAlaArgLeuIleTyrSer 472
QY 1414 ATTGTGAAATTTCTGTTACTGACCAACAGAGGTTTGGGAGGAGATGATGATGAGGC 1473
DB 473 GlnMetGlnPheProAlaThrAspGlyArgArgHisSerArgLysGlyLeuAlaThrAsp 492
QY 1474 TGGCTGACCTTGTGTGTGCTTCAAGTTCTTCAAGCAAAACATACATGATCCCATGAAGAC 1533
DB 493 TrpLeuAsnSerLeu----- 497
QY 1534 AGCGGAAAGCCCTGCTCTTAAGATATCATCTCTCTGGAACAACAATTTCTTTCAC 1593
DB 498 -----ArgIleGlyAspLysValaGlnValaLeuGlyLysGlnProAlaAspPheArg 514
QY 1594 TTACCA-----GATGACCCCTCAATCCCATCAATTAATGTTGGGT 1632

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Qy 1099 CAGTTCATTTTACCTGGTGTCTGAATCCGAGCAATTCCTAAAGAGCATTTTGGCA 1158
Db 368 ArgThrAlaLeuThrTyrTyrLeuAspIleThrAsnProProAlaGlyThrAsnValLeuTyr 387
Qy 1159 GCCCTTGAGCACTATACAGTACGAGTGTGAAAAAGCCAGCACTACAGAGCTGTGCACT 1218
Db 388 GluLeuAlaGlnTyrAlaSerGluProSerGluGlnLeuLeuArgLysMetAlaSer 407
Qy 1219 AAACAAGGGGAGCCGAT-----TATAGCCGCTTTTGACAGATGCTGTGCTGCTG 1272
Db 408 SerSerGlyGluGlyLysGluLeuTyrLeuSerTyrValAlaGluAlaArgHisIle 427
Qy 1273 TTGATGCTCCCTCGCTTCCTTCCTGAGCAGCAGCAGCTGCTGCTGCAACAT 1332
Db 428 LeuAlaIleLeuGlnAspCysProSerLeuArgProPoliLeuAspHisLeuGluLeu 447
Qy 1333 CTTCCTAACTTCAACCCAGACATATTCGTGTGCAAGCTCAAGTTATTTTACCCAGCA 1392
Db 448 LeuProArgLeuGlnAlaArgTyrTyrSerIleAlaSerSerLysValHisProAsn 467
Qy 1393 AAGCTCCATTTTGTCTTCAACATGTGGAATTTCTGTACTGCGCAACAGAGTTGTG 1452
Db 468 SerValHisIleCysAlaValAlaValGluTyrGluThrLysAlaGlyArg-----Ile 485
Qy 1453 CGAAGAGGAGTATGATACAGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCT 1512
Db 486 AsnLysGlyValAlaThrAsnTrpLeu-----ArgAlaLysGluPro--- 499
Qy 1513 ATACATGATCCCATGAGACAGCGGGAACCCCTGCTCTTAAGATATCCATCTCTCT 1572
Db 500 -----ValGlyLysGluGlyLysGluAlaLeuValProMetPheVal----- 513
Qy 1573 CGAACAACAATTTCTTTCACATTACAGATGACCCCTCAATCCCATATATATGTTGCT 1632
Db 514 ---ArgLysSerGlnPheArgLeuPheProPheLysAlaThrThrProValIleMetValGly 532
Qy 1633 CCAGAAACCCGAGATGACCCGCTTATTTGGGTTCCACACATAGAGAGAAATCCCAAGAA 1692
Db 533 ProGlnThrGlyValAlaProPheIleGlyPheIleGlnGluAlaTrpLeuArgGln 552
Qy 1693 CAACACCAGATGAAATTTTGAGACATGTGTGTTTGTGCTGAGCATTAAGAT 1752
Db 553 GlnGlyLysGlu-----ValGlyGluThrLeuLeuTyrTyrGlyCysArgSerAsp 570
Qy 1753 AGGATATCTATTCAGAAAAGAGCTCAGACATTTCTTAAGATGGAGTTTAATCTCAT 1812
Db 571 GluAspTyrLeuTyrArgGluGlnLeuAlaGlnPheHisArgAspGlyAlaLeuThrGln 590
Qy 1813 CTAAAGGTTTCTCTCAAGAGATGCTCTGTGGGAGGAGAAAGCCCAAGATAT 1872
Db 591 LeuAsnValAlaPheSerArg-----GluGlnSerHisLysValTyr 604
Qy 1873 GTACAAGCAACATCCAGCTTCATGAGCAGAGTGGCAAGAAATCTCTCCAGAGAAC 1932
Db 605 ValGlnHisLeuLeuLysGlnAspArgLysIleLeuTyrLys---LeuIleGlnGly 623
Qy 1933 GGCATATTTATGTGTGTGAGATGCAAGATATGCGCAAGATGATGATGATGCTT 1992
Db 624 AlaHisIleTyrValCysGlyAspAlaArgAsnMetAlaArgAspValGlnAsnThrPhe 643
Qy 1993 GTGCAATTAATACCAAGAGAGTGTGAGTTGAAAAAAGTACAGAAAGTAAACCTGTGCC 2052
Db 644 TyrAspIleValAlaGluLeuGlyAlaMetGlnHisAlaGlnAlaValAspTyrIleLys 663
Qy 2053 ACTTTAAAGAAAGAAACGCTACCTTCAGAGTATTTGTGCA 2094
Db 664 LysLeuMetThrLysGlyArgTyrSerLeuAspValTrpSer 677

```

RESULT 9
 US-09-371-347A-60
 ; Sequence 60, Application US/09371347A
 ; GENERAL INFORMATION:

```

; APPLICANT: Gravel, Roy A.
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; PRIOR FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 54
; LENGTH: 29
; TYPE: PRT
; ORGANISM: Homo sapiens
; US-09-371-347A-54

Alignment Scores:
Pred. No.: 0.0556 Length: 41
Score: 215.00 Matches: 41
Percent Similarity: 100.00% Conservative: 0
Best Local Similarity: 100.00% Mismatches: 0
Query Match: 5.71% Indels: 0
Gaps: 0

us-09-371-347a-43 (1-2097) x US-09-371-347A-60 (1-41)

Qy 1858 GCCCAGCAAGATGTGACAGACACATCCAGTTATGCGCAGAGTGGCGAGATC 1917
Db 1 AlaProAlaLysTyrValGlnAspAsnIleGlnLeuHisGlyGlnGlnValAlaArgIle 20

Qy 1918 CTCCTCAGAGAGAAAGCCCATATTATGTGTGAGATGCAAGATATATGCGCAGAGAT 1977
Db 21 LeuLeuGlnGluGlnGlyHisIleTyrValCysGlyAspAlaLysAsnMetAlaLysAsp 40

Qy 1978 GTA 1980
Db 41 Val 41

RESULT 10
US-09-371-347A-54
; Sequence 54, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A.
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; PRIOR FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 54
; LENGTH: 29
; TYPE: PRT
; ORGANISM: Homo sapiens
; US-09-371-347A-54

Alignment Scores:

```



```
Db      1 G1A1aMetTpLeuPhePheGlyCysArghIsLysAspArgSPtYrLeuPhe 18
RESULT 14
US-09-371-347A-55
; Sequence 55, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Rozen, Roy A,
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; CURRENT FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 55
; LENGTH: 19
; TYPE: PRT
; ORGANISM: Homo sapiens
US-09-371-347A-55

Alignment Scores:
Pred. No.:      12.6      Length:      19
Score:          104.00     Matches:      19
Percent Similarity: 100.00% Conservative: 0
Best Local Similarity: 100.00% Mismatches: 0
Query Match:    2.76%     Indels:      0
DB:             1         Gaps:         0

us-09-371-347a-43 (1-2097) x US-09-371-347A-55 (1-19)

Qy      1342 CTTGACCCGAGCATTTCGTGTCGACGCTCAAGTTATTTCACCCGAGAAAGCTC 1398
Db      1 LeuInProArgProTyrSerCysAlaSerSerSerLeuPheHsPProGlyLysLeu 19

RESULT 15
US-09-371-347A-52
; Sequence 52, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Rozen, Roy A,
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; CURRENT FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 52
; LENGTH: 20
; TYPE: PRT
; ORGANISM: Homo sapiens
US-09-371-347A-52

Alignment Scores:
Pred. No.:      14.3      Length:      20
Score:          100.00     Matches:      20
Percent Similarity: 100.00% Mismatches: 0
Query Match:    2.00%     Indels:      0
DB:             1         Gaps:         0
```

```
Percent Similarity: 100.00% Conservative: 0
Best Local Similarity: 100.00% Mismatches: 0
Query Match:      2.65%     Indels:      0
DB:               1         Gaps:         0

us-09-371-347a-43 (1-2097) x US-09-371-347A-52 (1-20)

Qy      10 TTTCTGTAATATATGCTACACAGCAGGAGCAAGCCATCGCAGAAATATGTGT 69
Db      1 PheLeuLeuLeuTyrAlaThrGlnGlnGlnGlnAlaAlaIleAlaGluGluMetCys 20

RESULT 16
US-09-371-347A-57
; Sequence 57, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Rozen, Roy A,
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; CURRENT FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 57
; LENGTH: 17
; TYPE: PRT
; ORGANISM: Homo sapiens
US-09-371-347A-57

Alignment Scores:
Pred. No.:      28.4      Length:      17
Score:          87.00     Matches:      17
Percent Similarity: 100.00% Conservative: 0
Best Local Similarity: 100.00% Mismatches: 0
Query Match:    2.31%     Indels:      0
DB:             1         Gaps:         0

us-09-371-347a-43 (1-2097) x US-09-371-347A-57 (1-17)

Qy      1450 CTTGCGAAGGAGATGATGACAGGCTGCGCTTGTGTGTTGCTTCAGTT 1500
Db      1 LeuArgLysGlyValCysThrGlyTyrPheuAlaLeuLeuValAlaSerVal 17

RESULT 17
US-09-371-347A-56
; Sequence 56, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Rozen, Roy A,
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; CURRENT FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
```

```

; SEQ ID NO 56
; LENGTH: 14
; TYPE: PRT
; ORGANISM: Homo sapiens
US-09-371-347A-56

Alignment Scores:
  Pred. No.:      72.7      Length:      14
  Score:          68.00     Matches:      14
  Percent Similarity: 100.00%  Conservative: 0
  Best Local Similarity: 100.00%  Mismatches: 0
  Query Match:      1.80%     Indels:      0
  DB:                1       Gaps:          0

us-09-371-347a-43 (1-2097) x US-09-371-347A-56 (1-14)

QY      1402 TTGTCTTCAACATTGTGGAATTTCTGTCTACTGCGCACACA 1443
Db       1 PheValPheAsnIleValGluPheLeuSerThrAlaThrThr 14

RESULT 18
US-09-371-347A-22
; Sequence 22, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A,
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; PRIOR FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: PasteSeq for Windows Version 4.0
; SEQ ID NO 22
; LENGTH: 682
; TYPE: PRT
; ORGANISM: Caenorhabditis elegans
US-09-371-347A-22

Alignment Scores:
  Pred. No.:      2.62      Length:      682
  Score:          64.50     Matches:      113
  Percent Similarity: 33.46%  Conservative: 62
  Best Local Similarity: 21.61%  Mismatches: 174
  Query Match:      1.73%     Indels:      175
  DB:                1       Gaps:          29

us-09-371-347a-43 (1-2097) x US-09-371-347A-22 (1-682)

QY      1353 TCTGGTGAAGTTAGTAGAGATG---TTGAGACAGAGAGATGAGTGGCTGGCAAGA 1297
Db       168 SerAsnLeuSylAsnGlnValLysThrGluGluGluSylAlaLeuLeuGlnLys 187

QY      1296 AGGGAAGACGAGAGATCCAAACAGCAGCAGCAGCTCTGTCAAAAGCGGCTATA 1237
Db       188 ArgIleGluAspGluGluSerAspAspGluGlyArgGly-----ArgVal 202

QY      1236 ATCGCGCTCCCTCTTTACTGACACAGCTCTGTAGCTCGGCTTTTCAGACGTGTA 1177
Db       203 IleLeuLys-----LysAspMetLeuIleProGluHisTyrAspTyrProGlu 217

QY      1176 GGTTATGTCACAGAGGCTGCAAAATGCTTTTGAATGCTCGAATTCAGACA 1117
Db       218 IleSerLeuLeuSylSerGln-----Thr 226
```

```

QY      1116 CCAAGTAAATGAATGAGTGAAGACATCCCGAGTATATGCTGGGTAAAGTAGCTCC 1057
Db       227 LeuSerAsnSpgLuanLeuArgVal-Pro-----IleAlaPr 239

QY      1056 TTTCCTCTTGTGTCTGCTCTTATTTCAAAAGCAGCTGCTCTTTATCTTCAAG 997
Db       239 OGlnProPheIleValSerSerValSerAsnArg-----LysLeuProGluAspThr 256

QY      996 CTGACGCTTTGAGTAGTGCTTTGACTGACATCACTGTTGGGAGATCCAGCTGAA 937
Db       256 LysLeuGluThrPglAsnLeuLys-----LysMetProGluValValThr----- 271

QY      936 GGCATCTCCAGGCTGATAGGAAAAAGTCTGATTGTAATGTCATTTCAACAGCAGT 877
Db       272 -----LysProPheGluVal-----Le 277

QY      876 GGTTTATAGCATCATTCGTAAGTGAATGAACTGCTTGAATGGCACTGAAAAC 817
Db       277 uValValSerAlaGluPheValThrAspProPheSerLysIleLysThrLysArgMe 297

QY      816 TGGATCTGCGAAGTACAGAT-----ACTGCGCTTCCCTCGCGCAGAGACTCC-- 765
Db       764 -----TGC-----AGATGTACTCG 751

QY      317 eTyRPhcCyValProAsnProAlaLeuGluValAsnPheIleLeuLysArgCys----- 335
Db       750 TAAATATTCTGGGGGTAAACCCAGATATTCCAGAGCGCTTGAG-----ACTGG 700

QY      336 -----GlyValLeuSpgIleAlaAspGlnGlnCysGluLeuSerIleAsnPr 351
Db       699 GGGTACCAACGGGTAAGAGAGACTCAAAAGCT-----TCAATTCAACATGGA 649

QY      351 olvsthrGluLysIleAsnAlaGlnIleProGlnHisValHisLysIleThrIleuAr 371
Db       648 TTGGTGTCTGTCACTGATTTGCTTCAAAACCTCAGAACTCTTCTTCTGAATATC 589

QY      371 gHisMetPheThrThrcysLeuAspIleArgAlaIleProGly---ArgProLeuIleAr 390
Db       588 GAATCTCAGAGCTCCAGCTTGAGAT-----TCAATGTGTAG 553

QY      390 gValLeuAlaGluSerThrSerAspProAsnGluLysArgArgLeuLeuGluLeuCySe 410
Db       552 CAGC-----TCTGACTCACAAGGCTGCTGCTCCTCAAGATGCAAGGTG 511

QY      410 rAlaGlnGlyMetLysAspPheThrAspPheValArgThrProGlyLeuSerIleuAlaAs 430
Db       510 TGCCACCGGAGTGCAGCACTTATCTCTCTGTCTGCTGCTGAC-----CTAAATAG 457

QY      430 pMetLeuPheAlaPheProAsnValLys-----ProProValAspArgLeuIleGlu 448
Db       456 CTTTTGAGGGCTGGCCAGAGTCCAGATTCACAGCTCAACCAAGTTTAACTTAC 397

QY      448 uLeuProArgLeuIleProArgProTyrSerMetSerSerTyrGluAsnArgLys----- 466
Db       396 ACAATCATTCGATGTCACATGTCATGTAAGAAATGCCGGGCTCCAAAGCTTGAATCGTT 337

QY      467 -----AlaArgyle 469

QY      336 ATCAATATATCTCCCCCATTCGAAAGATGATATTCGAATCAACCGAGCCAGTAA 277
Db       469 u-----IleTyrSerGluMetGluPheProAlaIth 479

QY      276 CCATACCGCAGGTGAGCAAAATCAACCGCAGCTTTGTTGTTCTGTATTCCTTAAC 217
Db       479 rAspGlyArgArgHisSerArgLysGlyLeuAlaIthAspTyr-----LeuAs 495

QY      216 AAACCTGCGG-----GCTGTGTCGGGAGCTCCCGGTG----- 183
Db       495 nSerLeuArgIleGlyAspLysValGlnValIleGluLysGluProAlaArgPheArgyle 515

QY      182 -----CCCGTGTGTAAGAACCAACCAACAGAGA----- 153
```



```

; APPLICANT: Gravel, Roy A,
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; PRIOR FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 30
; LENGTH: 18
; TYPE: PRT
; ORGANISM: Aspergillus niger
US-09-371-347A-30

```

```

Alignment Scores:
Pred. No.: 85.4 Length: 18
Score: 58.00 Matches: 10
Percent Similarity: 66.67% Conservative: 2
Best Local Similarity: 55.56% Mismatches: 6
Query Match: 1.54% Indels: 0
DB: 1 Gaps: 0

```

us-09-371-347a-43 (1-2097) x US-09-371-347A-30 (1-18)

```
Oy 1714 GGAGCAATGTGTTGTTTGGCTGCGAGCATAGAGTATATCTATTC 1767
Db 1 GtYProthrValLeuPheNeglyCyArGlySerAspGluAspPheLeuYr 18

```

```

RESULT 23
US-09-371-347A-38
; Sequence 38, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A,
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; PRIOR FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 38
; LENGTH: 18
; TYPE: PRT
; ORGANISM: Thiocapsa roseopersicina
US-09-371-347A-38

```

```

Alignment Scores:
Pred. No.: 88.7 Length: 18
Score: 57.00 Matches: 10
Percent Similarity: 66.67% Conservative: 2
Best Local Similarity: 55.56% Mismatches: 6
Query Match: 1.51% Indels: 0
DB: 1 Gaps: 0

```

us-09-371-347a-43 (1-2097) x US-09-371-347A-38 (1-18)

```
Oy 1714 GGAGCAATGTGTTGTTTGGCTGCGAGCATAGAGTATATCTATTC 1767
Db 1 GtYArGAsnItrPheuLlPheGlyAsnArGHisPhehiSArGAspPheLeuYr 18

```

```

RESULT 24
US-09-371-347A-32
; Sequence 32, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A,
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; PRIOR FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 32
; LENGTH: 18
; TYPE: PRT
; ORGANISM: Homo sapiens
US-09-371-347A-32

```

```

Alignment Scores:
Pred. No.: 95.5 Length: 18
Score: 55.00 Matches: 9
Percent Similarity: 66.67% Conservative: 3
Best Local Similarity: 50.00% Mismatches: 6
Query Match: 1.46% Indels: 0
DB: 1 Gaps: 0

```

us-09-371-347a-43 (1-2097) x US-09-371-347A-32 (1-18)

```
Oy 1714 GGAGCAATGTGTTGTTTGGCTGCGAGCATAGAGTATATCTATTC 1767
Db 1 GtYArGwetrhrleuValPheGlyCyArGArGProAspGluAspHisLeuYr 18

```

```

RESULT 25
US-09-371-347A-29
; Sequence 29, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A,
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; PRIOR FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 29
; LENGTH: 18
; TYPE: PRT
; ORGANISM: Vigna radiata
US-09-371-347A-29

```

Alignment Scores:

Pred. No.: 99 Length: 18
 Score: 54.00 Matches: 8
 Percent Similarity: 72.22% Conservative: 5
 Best Local Similarity: 44.44% Mismatches: 5
 Query Match: 1.43% Indels: 0
 DB: 1 Gaps: 0

us-09-371-347a-43 (1-2097) x US-09-371-347a-29 (1-18)

QY 1714 GGAGCAATGTGTTGTTTGGCTGCAGCATAGATAGGATATATCTATTC 1767

Db 1 GlytyrolaleuLeuphepGlyCysArgAsnArgGlnMetAspPheIleTyr 18

RESULT 26

US-09-371-347a-28
 ; Sequence 28, Application US/09371347A
 ; GENERAL INFORMATION:

APPLICANT: Gravel, Roy A,

APPLICANT: Leclerc, Daniel

APPLICANT: Wilson, Aaron

APPLICANT: Rosenblatt, David

TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:

TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE

TITLE OF INVENTION: DEFECTS, CARDIOVASCULAR DISEASE, AND CANCER

FILE REFERENCE: 50004/003003

CURRENT FILING DATE: 1999-08-10

PRIOR APPLICATION NUMBER: 09/232,028

PRIOR FILING DATE: 1999-01-15

PRIOR APPLICATION NUMBER: 60/071,622

PRIOR FILING DATE: 1998-01-16

NUMBER OF SEQ ID NOS: 61

SOFTWARE: FastSeq for Windows Version 4.0

SEQ ID NO 28

LENGTH: 18

TYPE: PRT

ORGANISM: Drosophila melanogaster

US-09-371-347a-28

Alignment Scores:

Pred. No.: 103 Length: 18
 Score: 53.00 Matches: 8
 Percent Similarity: 66.67% Conservative: 4
 Best Local Similarity: 44.44% Mismatches: 6
 Query Match: 1.41% Indels: 0
 DB: 1 Gaps: 0

us-09-371-347a-43 (1-2097) x US-09-371-347a-28 (1-18)

QY 1714 GGAGCAATGTGTTGTTTGGCTGCAGCATAGATAGGATATATCTATTC 1767

Db 1 GlytyserIleLeuTyrPheGlyCysArgLysArgSerGluAspTyrIleTyr 18

RESULT 27

US-09-371-347a-61
 ; Sequence 61, Application US/09371347A
 ; GENERAL INFORMATION:

APPLICANT: Gravel, Roy A,

APPLICANT: Leclerc, Daniel

APPLICANT: Wilson, Aaron

APPLICANT: Rosenblatt, David

TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:

TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE

TITLE OF INVENTION: DEFECTS, CARDIOVASCULAR DISEASE, AND CANCER

FILE REFERENCE: 50004/003003

CURRENT FILING DATE: 1999-08-10

PRIOR APPLICATION NUMBER: 09/232,028

PRIOR FILING DATE: 1999-01-15

PRIOR APPLICATION NUMBER: 60/071,622

;; PRIOR FILING DATE: 1998-01-16

;; NUMBER OF SEQ ID NOS: 61

;; SOFTWARE: FastSeq for Windows Version 4.0

;; SEQ ID NO 61

;; LENGTH: 9

;; TYPE: PRT

;; ORGANISM: Homo sapiens

US-09-371-347a-61

Alignment Scores:

Pred. No.: 721 Length: 9
 Score: 51.00 Matches: 9
 Percent Similarity: 100.00% Conservative: 0
 Best Local Similarity: 100.00% Mismatches: 0
 Query Match: 1.35% Indels: 0
 DB: 1 Gaps: 0

us-09-371-347a-43 (1-2097) x US-09-371-347a-61 (1-9)

QY 2068 AAAGCTACCTTCAGATATTGGTCA 2094

Db 1 LysArgTyrLeuGlnAspIleTyrSer 9

RESULT 28

US-09-371-347a-36
 ; Sequence 36, Application US/09371347A
 ; GENERAL INFORMATION:

APPLICANT: Gravel, Roy A,

APPLICANT: Leclerc, Rima

APPLICANT: Leclerc, Daniel

APPLICANT: Wilson, Aaron

APPLICANT: Rosenblatt, David

TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:

TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE

TITLE OF INVENTION: DEFECTS, CARDIOVASCULAR DISEASE, AND CANCER

FILE REFERENCE: 50004/003003

CURRENT FILING DATE: 1999-08-10

PRIOR APPLICATION NUMBER: 09/232,028

PRIOR FILING DATE: 1999-01-15

PRIOR APPLICATION NUMBER: 60/071,622

PRIOR FILING DATE: 1998-01-16

NUMBER OF SEQ ID NOS: 61

SOFTWARE: FastSeq for Windows Version 4.0

SEQ ID NO 36

LENGTH: 18

TYPE: PRT

ORGANISM: Escherichia coli

US-09-371-347a-36

Alignment Scores:

Pred. No.: 110 Length: 18
 Score: 51.00 Matches: 9
 Percent Similarity: 51.11% Conservative: 2
 Best Local Similarity: 50.00% Mismatches: 7
 Query Match: 1.35% Indels: 0
 DB: 1 Gaps: 0

us-09-371-347a-43 (1-2097) x US-09-371-347a-36 (1-18)

QY 1714 GGAGCAATGTGTTGTTTGGCTGCAGCATAGATAGGATATATCTATTC 1767

Db 1 GlyLysAsnTrpLeuPhePheGlyAsnProHisPheThrGluAspPheLeuTyr 18

RESULT 29

US-09-371-347a-37
 ; Sequence 37, Application US/09371347A
 ; GENERAL INFORMATION:

APPLICANT: Gravel, Roy A,

APPLICANT: Leclerc, Rima

APPLICANT: Leclerc, Daniel

APPLICANT: Wilson, Aaron

APPLICANT: Rosenblatt, David

```

; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; PRIOR FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 37
; LENGTH: 18
; TYPE: PRT
; ORGANISM: Saccharomyces cerevisiae
US-09-371-347A-37

Alignment Scores:
Pred. No.: 110 Length: 18
Score: 51.00 Matches: 8
Percent Similarity: 72.22% Conservative: 5
Best Local Similarity: 44.44% Mismatches: 5
Query Match: 1.35% Indels: 0
Gaps: 0

us-09-371-347A-43 (1-2097) x US-09-371-347A-37 (1-18)

QY 1714 GGACAGTGGTGTGTTTGGCGTGAAGATAGATGATATCTATTC 1767
DB 1 GYGVluvalPheLeuTyrlLeuGlySerArgHisLysArgGluGlyLeuTyrl 18

RESULT 30
US-09-371-347A-48
; Sequence 48, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A,
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; PRIOR FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 48
; LENGTH: 689
; TYPE: PRT
; ORGANISM: Homo sapiens
US-09-371-347A-48

Alignment Scores:
Pred. No.: 4.26 Length: 689
Score: 50.00 Matches: 23
Percent Similarity: 39.33% Conservative: 12
Best Local Similarity: 25.84% Mismatches: 38
Query Match: 1.34% Indels: 17
Gaps: 2

us-09-371-347A-43 (1-2097) x US-09-371-347A-48 (1-689)

QY 1894 GAAGCTGAGATGTTGCTTGTACATACCTTGTGGGGCTTCTCTCCCAACAGAGCAT 1835
DB 418 AspalacysalacysleuleuaspheuleuleualapheroserCysglnProleu 437
```

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QY 1834 CTCCTGAGAGAAACCTTAGATAGATAGATCCCATCTTAAGGAAATGCTGAGCT 1775
DB 438 SerleuleuleuGHisleuProlysleuLn----- 448
QY 1774 CTTTCTGAATAGATTAATCCCTTATCCTTATGCTGACGCCAAAACACCA--CATTC 1717
DB 449 -----ProArgProTySerCysAlaserSerleuPheHisPro 462
QY 1716 TCCAAATTTCCATCTGGGTTGTTGTTGAGTTCTCTCT--ATGTTGTAAGAACCC 1660
DB 463 GlylysleuHisPheValPheasnilleValGluPheuserThrAlaThrGluVal 482
QY 1659 AATAACGGGGCTATGCCGCTCTCG 1633
DB 483 LeuArglyselYValCysThrGlyTyr 491

RESULT 31
US-09-371-347A-46
; Sequence 46, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A,
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; PRIOR FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 46
; LENGTH: 697
; TYPE: PRT
; ORGANISM: Homo sapiens
US-09-371-347A-46

Alignment Scores:
Pred. No.: 4.22 Length: 697
Score: 50.00 Matches: 23
Percent Similarity: 39.33% Conservative: 12
Best Local Similarity: 25.84% Mismatches: 38
Query Match: 1.34% Indels: 17
Gaps: 2

us-09-371-347A-43 (1-2097) x US-09-371-347A-46 (1-697)

QY 1894 GAAGCTGAGATGTTGCTTGTACATACCTTGTGGGGCTTCTCTCCCAACAGAGCAT 1835
DB 419 AspalacysalacysleuleuaspheuleuleualapheroserCysglnProleu 438
QY 1834 CTCCTGAGAGAAACCTTAGATAGATAGATCCCATCTTAAGGAAATGCTGAGCT 1775
DB 439 SerleuleuleuGHisleuProlysleuLn----- 449
QY 1774 CTTTCTGAATAGATTAATCCCTTATCCTTATGCTGACGCCAAAACACCA--CATTC 1717
DB 450 -----ProArgProTySerCysAlaserSerleuPheHisPro 463
QY 1716 TCCAAATTTCCATCTGGGTTGTTGTTGAGTTCTCTCT--ATGTTGTAAGAACCC 1660
DB 464 GlylysleuHisPheValPheasnilleValGluPheuserThrAlaThrGluVal 483
QY 1659 AATAACGGGGCTATGCCGCTCTCG 1633
DB 484 LeuArglyselYValCysThrGlyTyr 492
```



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RESULT 32
US-09-371-347A-2
; Sequence 2, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A.
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE.
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; PRIOR FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 2
; LENGTH: 698
; TYPE: PRT
; ORGANISM: Homo sapiens
US-09-371-347A-2

Alignment Scores:
Pred. No.: 4.21 Length: 698
Score: 50.00 Matches: 23
Percent Similarity: 39.33% Conservative: 12
Best Local Similarity: 25.84% Mismatches: 38
Query Match: 1.34% Indels: 17
DB: 1 Gaps: 2

US-09-371-347A-43 (1-2097) x US-09-371-347A-2 (1-698)
QY 1894 GAAGCTGATGTTCTTGTACATCTTGTGCGGGCTTCTCTCCCAACAGAGCAT 1835
Db 419 AspalacysalacysleuAspleuAspleuAlaheProSerCysGlnProleu 438
QY 1834 CTCTTGAGAGGAACCTTATGATGATGATGATGATGATGATGATGATGATGAT 1775
Db 439 SerleuLeuLeuGlnHisleuProlyleuGln----- 449
QY 1774 CTCTTGATGATGATGATGATGATGATGATGATGATGATGATGATGATGATGAT 1717
Db 450 -----ProArgProTyrSerCysAlaSerSerSerleuPheHisPro 463
QY 1716 TCCAAATTTCCATCTGCGGTGTTGTTCTTGAGAGTTTCTCTCT--ATGTTGTAAGAACCC 1660
Db 464 GlylysleuHisPheValPheAsnIleValGlnPheleuSerThrAlaThrThrgluVal 483
QY 1659 AATAACGGGGCTATGCCGGTTCCTGG 1633
Db 484 LeuArglysglyValCysThrGlyTyr 492

RESULT 33
US-09-371-347A-21
; Sequence 21, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A.
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE.
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; CURRENT FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
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; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; PRIOR FILING DATE: 1999-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 21
; LENGTH: 698
; TYPE: PRT
; ORGANISM: Homo sapiens
US-09-371-347A-21

Alignment Scores:
Pred. No.: 4.21 Length: 698
Score: 50.00 Matches: 23
Percent Similarity: 39.33% Conservative: 12
Best Local Similarity: 25.84% Mismatches: 38
Query Match: 1.34% Indels: 17
DB: 1 Gaps: 2

US-09-371-347A-43 (1-2097) x US-09-371-347A-21 (1-698)
QY 1894 GAAGCTGATGTTCTTGTACATCTTGTGCGGGCTTCTCTCCCAACAGAGCAT 1835
Db 419 AspalacysalacysleuAspleuAspleuAlaheProSerCysGlnProleu 438
QY 1834 CTCTTGAGAGGAACCTTATGATGATGATGATGATGATGATGATGATGATGAT 1775
Db 439 SerleuLeuLeuGlnHisleuProlyleuGln----- 449
QY 1774 CTCTTGATGATGATGATGATGATGATGATGATGATGATGATGATGATGATGAT 1717
Db 450 -----ProArgProTyrSerCysAlaSerSerSerleuPheHisPro 463
QY 1716 TCCAAATTTCCATCTGCGGTGTTGTTCTTGAGAGTTTCTCTCT--ATGTTGTAAGAACCC 1660
Db 464 GlylysleuHisPheValPheAsnIleValGlnPheleuSerThrAlaThrThrgluVal 483
QY 1659 AATAACGGGGCTATGCCGGTTCCTGG 1633
Db 484 LeuArglysglyValCysThrGlyTyr 492

RESULT 34
US-09-371-347A-42
; Sequence 42, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A.
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE.
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; CURRENT FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 42
; LENGTH: 698
; TYPE: PRT
; ORGANISM: Homo sapiens
US-09-371-347A-42

Alignment Scores:
Pred. No.: 4.21 Length: 698
Score: 50.00 Matches: 23
Percent Similarity: 39.33% Conservative: 12
Best Local Similarity: 25.84% Mismatches: 38
```

```
Query Match: 1.34% Indels: 17
DB: 1 Gaps: 2
us-09-371-347a-43 (1-2097) x US-09-371-347a-42 (1-698)
QY 1894 GAAGCTGAGATGTTCTTGTACATACCTTGTGGGGCTTCTCTCCCAACAGAGCAT 1835
   |||:|||||:|||||:|||||:|||||:|||||:|||||:|||||:|||||:|||||:
DB 419 AsplacysalacysleuleuaspheuleuulapheroserCysglnproleu 438
QY 1834 CTCTTGAGAGAAACCTTTAGATGATTAAGATCCATGCTTAAGAAATGTTGAGCT 1775
   |||:|||||:|||||:|||||:|||||:|||||:|||||:|||||:|||||:
DB 439 SerleuleuulglnstleuprolysleuGln----- 449
QY 1774 CTTTTCGATAGATATATCCCTATGCTTATGCTGAGCCAAACACACCA---CATTGC 1717
   |||:|||||:|||||:|||||:|||||:|||||:|||||:|||||:|||||:
DB 450 ----- 463
QY 1716 TCCAAAATTTCCATCTGGGTGTTGTTCTTGTGAGATTCTCTCT---ATGTTGTAGAACCC 1660
   |||:|||||:|||||:|||||:|||||:|||||:|||||:|||||:|||||:
DB 464 GlylysleuhsphavalPheasnllevalGlnpheuuserThrAlaThrGluVal 483
QY 1659 AATAACGGGGCTATGCCGGTCTCG 1633
   |||:|||||:|||||:|||||:|||||:|||||:|||||:|||||:|||||:
DB 484 LeuArglysglyValCysThrGlyTrp 492

RESULT 35
US-09-371-347a-44
; Sequence 44, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A,
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; CURRENT FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; PRIOR FILING DATE: 1998-01-16
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 44
; LENGTH: 698
; TYPE: PRT
; ORGANISM: Homo sapiens
US-09-371-347a-44

Alignment Scores:
Pred. No.: 4.21 Length: 698
Score: 50.00 Matches: 23
Percent Similarity: 39.33% Conservative: 12
Best Local Similarity: 25.84% Mismatches: 38
Query Match: 1.34% Indels: 17
DB: 1 Gaps: 2
us-09-371-347a-43 (1-2097) x US-09-371-347a-44 (1-698)
QY 1894 GAAGCTGAGATGTTCTTGTACATACCTTGTGGGGCTTCTCTCCCAACAGAGCAT 1835
   |||:|||||:|||||:|||||:|||||:|||||:|||||:|||||:|||||:
DB 419 AsplacysalacysleuleuaspheuleuulapheroserCysglnproleu 438
QY 1834 CTCTTGAGAGAAACCTTTAGATGATTAAGATCCATGCTTAAGAAATGTTGAGCT 1775
   |||:|||||:|||||:|||||:|||||:|||||:|||||:|||||:|||||:
DB 439 SerleuleuulglnstleuprolysleuGln----- 449
QY 1774 CTTTTCGATAGATATATCCCTATGCTTATGCTGAGCCAAACACACCA---CATTGC 1717
   |||:|||||:|||||:|||||:|||||:|||||:|||||:|||||:|||||:
DB 450 ----- 463
; ProArgProlyserCysAlaSerSerLeuPheHisPro 463
```

```
QY 1716 TCCAAAATTTCCATCTGGGTGTTGTTCTTGTGAGATTCTCTCT---ATGTTGTAGAACCC 1660
   |||:|||||:|||||:|||||:|||||:|||||:|||||:|||||:|||||:
DB 464 GlylysleuhsphavalPheasnllevalGlnpheuuserThrAlaThrGluVal 483
QY 1659 AATAACGGGGCTATGCCGGTCTCG 1633
   |||:|||||:|||||:|||||:|||||:|||||:|||||:|||||:|||||:
DB 484 LeuArglysglyValCysThrGlyTrp 492

RESULT 36
US-09-371-347a-27
; Sequence 27, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A,
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; CURRENT FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; PRIOR FILING DATE: 1998-01-16
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 27
; LENGTH: 18
; TYPE: PRT
; ORGANISM: Oryctolagus cuniculus
US-09-371-347a-27

Alignment Scores:
Pred. No.: 118 Length: 18
Score: 49.00 Matches: 8
Percent Similarity: 61.11% Conservative: 3
Best Local Similarity: 44.44% Mismatches: 7
Query Match: 1.30% Indels: 0
DB: 1 Gaps: 0
us-09-371-347a-43 (1-2097) x US-09-371-347a-27 (1-18)
QY 1714 GAAGCAATGTGTTGTTTGTGCTGAGCATATGAGATATGATATATTC 1767
   |||:|||||:|||||:|||||:|||||:|||||:|||||:|||||:|||||:
DB 1 GlyGlnThrleuLeuTyTYrGlyCysArgAlaAlaGlnAspTyLeuTyR 18

RESULT 37
US-09-371-347a-23
; Sequence 23, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A,
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; CURRENT FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; PRIOR FILING DATE: 1998-01-16
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 23
; LENGTH: 677
```

```

; TYPE: PRT
; ORGANISM: Homo sapiens
US-09-371-347A-23

Alignment Scores:
Pred. No.: 4.47 Length: 677
Score: 49.00 Matches: 20
Percent Similarity: 45.12% Conservative: 17
Best Local Similarity: 24.39% Mismatches: 27
Query Match: 1.31% Indels: 18
DB: 1 Gaps: 4

us-09-371-347a-43 (1-2097) x US-09-371-347A-23 (1-677)
QY 695 ACCGACGGCTGAATGAGATCTCAAGCTTCATTAACAATTGATGTTGCTGCTTC 636
DB 13 SerGluValAlaAlaGluGlu---ValSerLeuPheSerMetThrAspMetIleLeuPhe 31
QY 635 ACTGCA-----TTTTCCTCAAAACCTCGAATCCTTCTT 600
DB 32 SerLeuIleValGlyLeuLeuThrTyrTrpPheLeuPheArgLysLysGluGluVal 51
QY 599 CCTGAATCATGCAATCTCAGAGCTCGACTTGAATGATGTAGACGCTGACTTC 540
DB 52 ProGluPheThrLysIleGlnThrLeuThr-----SerSerValArgGluSerSerPhe 69
QY 539 ACA-----AGCTCTCTCTCAAGATGCAAGTGCAGTGCAGCCACCGCG 501
DB 70 ValGluLysMetLysLysThrGlyArgGlnIleLeuValPheTyrGlySerGlnThrGly 89
QY 500 AGTGC 495
DB 90 ThrAla 91

RESULT 38
US-09-371-347A-33
; Sequence 33, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A.
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; PRIOR FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 33
; LENGTH: 18
; TYPE: PRT
; ORGANISM: Homo sapiens
US-09-371-347A-33

Alignment Scores:
Pred. No.: 150 Length: 18
Score: 42.00 Matches: 8
Percent Similarity: 62.50% Conservative: 2
Best Local Similarity: 50.00% Mismatches: 6
Query Match: 1.11% Indels: 0
DB: 1 Gaps: 0

us-09-371-347a-43 (1-2097) x US-09-371-347A-33 (1-18)
QY 1720 ATGTGTTGTTTGGCTGAGCATTAAGATTAATCTATTC 1767
DB 3 MetValLeuValPheGlyCysArgGlnSerLysIleAspHisIleTyr 18

```

```

DB 3 MetThrLeuValPheGlyCysArgCysSerGlnLeuAspHisLeuTyr 18

RESULT 39
US-09-371-347A-31
; Sequence 31, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A.
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; PRIOR FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 31
; LENGTH: 18
; TYPE: PRT
; ORGANISM: Homo sapiens
US-09-371-347A-31

Alignment Scores:
Pred. No.: 160 Length: 18
Score: 40.00 Matches: 7
Percent Similarity: 62.50% Conservative: 3
Best Local Similarity: 43.75% Mismatches: 6
Query Match: 1.06% Indels: 0
DB: 1 Gaps: 0

us-09-371-347a-43 (1-2097) x US-09-371-347A-31 (1-18)
QY 1720 ATGTGTTGTTTGGCTGAGCATTAAGATTAATCTATTC 1767
DB 3 MetValLeuValPheGlyCysArgGlnSerLysIleAspHisIleTyr 18

RESULT 40
US-09-371-347A-55
; Sequence 55, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A.
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; PRIOR FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 55
; LENGTH: 19
; TYPE: PRT
; ORGANISM: Homo sapiens
US-09-371-347A-55

Alignment Scores:
Pred. No.: 180 Length: 19
Score: 34.50 Matches: 7

```

Percent Similarity: 50.00% Conservative: 3
 Best Local Similarity: 35.00% Mismatches: 5
 Query Match: 0.92% Indels: 5
 DB: 1 Gaps: 1

us-09-371-347a-43 (1-2097) x US-09-371-347a-55 (1-19)

QY 1756 CCTATCCTTATGCTGCGAGCAAAAACACCAATGCTCCAAAATTCCATCTGGGT 1697
 Db 3 ProargProtYrserCysAlaSerSerleu-----PheHisProGly 17

RESULT 41
 US-09-371-347a-39
 ; Sequence 39, Application US/09371347A
 ; GENERAL INFORMATION:
 ; APPLICANT: Gravel, Roy A,
 ; APPLICANT: Rozen, Rima
 ; APPLICANT: Leclerc, Daniel
 ; APPLICANT: Wilson, Aaron
 ; APPLICANT: Rosenblatt, David
 ; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
 ; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
 ; FILE REFERENCE: 50004/003003
 ; CURRENT APPLICATION NUMBER: US/09/371,347A
 ; PRIOR FILING DATE: 1999-08-10
 ; PRIOR APPLICATION NUMBER: 09/232,028
 ; PRIOR FILING DATE: 1999-01-15
 ; PRIOR APPLICATION NUMBER: 60/071,622
 ; PRIOR FILING DATE: 1998-01-16
 ; NUMBER OF SEQ ID NOS: 61
 ; SOFTWARE: FastSeq for Windows Version 4.0
 ; SEQ ID NO 39
 ; LENGTH: 19
 ; TYPE: PRT
 ; ORGANISM: Pisum sativum
 ; US-09-371-347a-39

US-09-371-347a-39

Alignment Scores:
 Pred. No.: 182 Length: 19
 Score: 34.00 Matches: 6
 Percent Similarity: 53.85% Conservative: 1
 Best Local Similarity: 46.15% Mismatches: 6
 Query Match: 0.90% Indels: 0
 DB: 1 Gaps: 0

us-09-371-347a-43 (1-2097) x US-09-371-347a-39 (1-19)

QY 1714 GGAGCAATGTGTTGTTTGGCTGCGACGATAGAGAT 1752
 Db 1 GlyLeuAlaTrpLeuPheLeuGlyValAlaAsnValasp 13

RESULT 42
 US-09-371-347a-40

; Sequence 40, Application US/09371347A
 ; GENERAL INFORMATION:
 ; APPLICANT: Gravel, Roy A,
 ; APPLICANT: Rozen, Rima
 ; APPLICANT: Leclerc, Daniel
 ; APPLICANT: Wilson, Aaron
 ; APPLICANT: Rosenblatt, David
 ; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
 ; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
 ; FILE REFERENCE: 50004/003003
 ; CURRENT APPLICATION NUMBER: US/09/371,347A
 ; PRIOR FILING DATE: 1999-08-10
 ; PRIOR APPLICATION NUMBER: 09/232,028
 ; PRIOR FILING DATE: 1999-01-15
 ; PRIOR APPLICATION NUMBER: 60/071,622
 ; PRIOR FILING DATE: 1998-01-16
 ; NUMBER OF SEQ ID NOS: 61
 ; SOFTWARE: FastSeq for Windows Version 4.0

; SEQ ID NO 40
 ; LENGTH: 18
 ; TYPE: PRT
 ; ORGANISM: Spinacia oleracea
 ; US-09-371-347a-40

Alignment Scores:
 Pred. No.: 208 Length: 18
 Score: 31.00 Matches: 5
 Percent Similarity: 62.50% Conservative: 0
 Best Local Similarity: 62.50% Mismatches: 3
 Query Match: 0.82% Indels: 0
 DB: 1 Gaps: 0

us-09-371-347a-43 (1-2097) x US-09-371-347a-40 (1-18)

QY 1714 GGAGCAATGTGTTGTTTGGCT 1737
 Db 1 GlyLeuAlaTrpLeuPheLeuGly 8

RESULT 43

US-09-371-347a-36
 ; Sequence 36, Application US/09371347A
 ; GENERAL INFORMATION:
 ; APPLICANT: Gravel, Roy A,
 ; APPLICANT: Rozen, Rima
 ; APPLICANT: Leclerc, Daniel
 ; APPLICANT: Wilson, Aaron
 ; APPLICANT: Rosenblatt, David
 ; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
 ; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
 ; FILE REFERENCE: 50004/003003
 ; CURRENT APPLICATION NUMBER: US/09/371,347A
 ; PRIOR FILING DATE: 1999-08-10
 ; PRIOR APPLICATION NUMBER: 09/232,028
 ; PRIOR FILING DATE: 1999-01-15
 ; PRIOR APPLICATION NUMBER: 60/071,622
 ; PRIOR FILING DATE: 1998-01-16
 ; NUMBER OF SEQ ID NOS: 61
 ; SOFTWARE: FastSeq for Windows Version 4.0
 ; SEQ ID NO 36
 ; LENGTH: 18
 ; TYPE: PRT
 ; ORGANISM: Escherichia coli
 ; US-09-371-347a-36

Alignment Scores:
 Pred. No.: 214 Length: 18
 Score: 30.00 Matches: 4
 Percent Similarity: 85.71% Conservative: 2
 Best Local Similarity: 57.14% Mismatches: 1
 Query Match: 0.80% Indels: 0
 DB: 1 Gaps: 0

us-09-371-347a-43 (1-2097) x US-09-371-347a-36 (1-18)

QY 1967 ATATCTTGATCTCCACAC 1947
 Db 5 LeuPheHeGlyAsnProHis 11

RESULT 44

US-09-371-347a-59
 ; Sequence 59, Application US/09371347A
 ; GENERAL INFORMATION:
 ; APPLICANT: Gravel, Roy A,
 ; APPLICANT: Rozen, Rima
 ; APPLICANT: Leclerc, Daniel
 ; APPLICANT: Wilson, Aaron
 ; APPLICANT: Rosenblatt, David
 ; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
 ; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
 ; FILE REFERENCE: 50004/003003
 ; CURRENT APPLICATION NUMBER: US/09/371,347A
 ; PRIOR FILING DATE: 1999-08-10
 ; PRIOR APPLICATION NUMBER: 09/232,028
 ; PRIOR FILING DATE: 1999-01-15
 ; PRIOR APPLICATION NUMBER: 60/071,622
 ; PRIOR FILING DATE: 1998-01-16
 ; NUMBER OF SEQ ID NOS: 61
 ; SOFTWARE: FastSeq for Windows Version 4.0

```

; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371.347A
; CURRENT FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: PastSeq for Windows Version 4.0
; SEQ ID NO 59
; LENGTH: 6
; TYPE: PRT
; ORGANISM: Homo sapiens
US-09-371-347A-59

```

```

Alignment Scores:
Pred. No.: 1.08e+03      Length: 6
Score: 29.00             Matches: 6
Percent Similarity: 100.00% Conservative: 0
Best Local Similarity: 100.00% Mismatches: 0
Query Match: 0.77%       Indels: 0
DB: 1                     Gaps: 0

```

us-09-371-347a-43 (1-2097) x US-09-371-347A-59 (1-6)

```

QY      1822 TCCTTCAGAGATGCT 1839
Db      1 SerpaserArgaspala 6

```

RESULT 45

```

US-09-371-347A-58
; Sequence 58, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A,
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE,
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; TITLE OF INVENTION: DEFECTS, CARDIOVASCULAR DISEASE, AND CANCER
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371.347A
; CURRENT FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: PastSeq for Windows Version 4.0
; SEQ ID NO 58
; LENGTH: 22
; TYPE: PRT
; ORGANISM: Homo sapiens
US-09-371-347A-58

```

```

Alignment Scores:
Pred. No.: 183           Length: 22
Score: 29.00             Matches: 6
Percent Similarity: 60.00% Conservative: 0
Best Local Similarity: 60.00% Mismatches: 4
Query Match: 0.78%       Indels: 0
DB: 1                     Gaps: 0

```

us-09-371-347a-43 (1-2097) x US-09-371-347A-58 (1-22)

```

QY      515 GGTGATGCCACGGAGTGGCACTATC 486
Db      7 GlyProGlyThrGlyIleAlaProPheIle 16

```

Search completed: May 9, 2005, 15:32:08
 Job time : 27 secs

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QY 121 TCCGATAGTATGACCTTAAACCGAAGACGCTCTGTTGTTGTTGTTTCTTACGACG 180
DB 41 SeraspysstyryaspleuysstmglnthralaProleuvalValvalSerthnthr 60
QY 181 GGACCCGAGAGCCACCCGACACAGCCGCAAGTTTGTAAAGAAATACAGAACCAACA 240
DB 61 GlyThrGlyaspProPaspThralAarglySphenVallysglnlLeglnasnglnthr 80
QY 241 CTGCGGTTGATTTCTTGTCTACCTGCGGTATGGGTTACTGGGTTCTCGGATTCAGAA 300
DB 81 LeuproValaspPhelelaahlsleuargtryglyleuLeuGlyleuGlyaspSerGlu 100
QY 301 TACACCTACTTTTCAATGGGGGAGAGATAATGATTAACGACTTCAAGACCTTGAGACC 360
DB 101 TyThrTyrrheCySaenglyGlyVallelelsaplysaTglsuGlnGlyAla 120
QY 361 CGGCAATTTATGACACTGACATGACATGACATGCTGTGTAGGTTTGAACCTTGTTGAG 420
DB 121 ArgHisphenTyraPThnrglyHlsalaspaspCysValGlyleuGlyleuValGlylu 140
QY 421 CCGTGATTTGCTGACTCTGGCCGACCTTCAGAAAGCAATTTAGTCAAGACAGACAA 480
DB 141 ProThrIleagllyleuTrpProIaleuarglyshsPheargSerSerArgGlyGln 160
QY 481 GAGAGATTAAGTGGCGCACTCCGCTGACATCACCTGCATCTTGAGACAGACCTTGTG 540
DB 161 GluGlnIleSerGlyAlaIleuProValAlaSerProAlaSerleuAlaGlyThrAspLeuVal 180
QY 541 AAGTACAGAGCTGTACACATTTGAATCTCAAGTGAAGCTTCTGAGATTCGATGATTCAGGA 600
DB 181 LysSerGlyleuLeuHlsileGlnSerGlnValGlyleuLeuArgPheaspaspSerGly 200
QY 601 AGAAGATTTCTGAGTTTGAAGCAAAATGCACTGAAAGCAACCAATCCAAATGGTGA 660
DB 201 ArgLysaspSerGlyValleuLysGlnasnaValasnsersaanglnSerAsnValVal 220
QY 661 ATTGAACATTTGAGTCTTCACTTACCCGTTCCGTTACCCCACTCTCAAGCCTCTCTG 720
DB 221 IleGlnaspPheGlnuSerSerleuThrArgSerValProProleuSerGlnAlaSerleu 240
QY 721 AATATCTCTGTTTACCCCGAATATTTACAGGTACATCTGCAAGAGTCTCTGGCCAG 780
DB 241 AsnIleProGlyleuProProGlyIuTyLeuGlnValHlsleuGlnGlnuSerleuGlyGln 260
QY 781 GAGGAAGCAAGATATCTGTGACTTCAGAGATCCAGTTTTCAGGGCAATTCGAAG 840
DB 261 GluGlnuSerGlnValSerValThrSerAlaasProValPheGlnValProIleSerLys 280
QY 841 GCAATTCACCTTACTACGAATGATGCATMAAAACACTGTGTGTAGATTTGAGACTT 900
DB 281 AlaValGlnleuThrThrAsnAspAlaIlelysthrThrleuLeuValGlyleuAspIle 300
QY 901 TCAAAATACAGACTTTTCTTACGCTGAGAGATGCTTCAGCGGATCTGCCCTTAACAT 960
DB 301 SerasnthrasPheSerTyrglnProGlyAspAlaPheSerValIleCysPheAsnSer 320
QY 961 GATTCTGAGGTACAAAGCTTCTCAAAAGACTGACAGCTGGAAGATAAAGAGACACTGC 1020
DB 321 AspSerGlnValGlnSerleuLeuGlnArgLeuGlnuSerGlnuAspLysArgGlnHlsCys 340
QY 1021 GTCCTTTGAAATTAAGGACAGACACAAAGAAAGAGCTACCTTACCCGACATATA 1080
DB 341 ValLeuLeuysIlelysaIleasPThrlylsylslysglyAlaThrleuProGlnHlsIle 360
QY 1081 CTGCGGAGATGTTCTTCACGTTATTTTACCTGGTGTCTTGAATTCGACGAATTCCT 1140
DB 361 ProIleGlyCysSerleuGlnPheIlePheThrTrpCysleuGlnIleArgAlaIlePro 380
QY 1141 AAAAAGCATTTTTCGAGCCCTGTGACATATCCAGTGACAGTGCTGAAAGCGAGG 1200
DB 381 LysLysAlaPheLeuArgAlaLeuValAspTyrrThrSerAspSerAlaGlnLysArgArg 400
QY 1201 CTACAGAGAGCTGTGACATTAACAAAGGGGACCGATTAATAGCCGCTTTGTACGAGATGCC 1260

DB 401 LeuGlnIleuLeuCysserLysGlnGlyAlaAlaaspTyrrSerArgPheValArgAspAla 420
QY 1261 TGAGCTGTGTTTGGATCTCTCTCTGCTTCCCTTCTTGCCAGCCACCACTAGTCTC 1320
DB 421 CysAlaCysleuLeuaspLeuLeuAlaPheProSerCysGlnProProleuSerleu 440
QY 1321 CTGCTGACATCTTCTTAAACTCAACCCAGACACATTCGTGTGAGAGCTCAAGTTTA 1380
DB 441 LeuLeuGlnuHlsleuProLysleuGlnProArgProTyrrSerCysAlaSerSerleu 460
QY 1381 TTTCCACCAAGAAAGCTCCATTTTGTCTTCAACATTTGGAATTTCTGTCTACTGCCACA 1440
DB 461 PheHlsProGlyLysleuHlsPheValPheAsnIleValGluPheLeuSerThrAlaThr 480
QY 1441 ACAGAGTTCTCGGAAAGGAGATATGACAGCTGCGCTGCGCTTGTGTTGTTCTCACTT 1500
DB 481 ThrGlyValleuArglysglyValCysThrGlyTyrrleuAlaLeuLeuValAlaSerVal 500
QY 1501 CTTGACGCCAAACATACATGATGCCATGAAAGACAGCGGAAAGCCCTGCTCTTAAGATA 1560
DB 501 LeuGlnProAsnIleHlsAlaSerHlsGlnaspSerGlyLysAlaLeuAlaProLysIle 520
QY 1561 TCCATCTCTCTCGACACACAAATTTCTTCCACTTACACAGATGACCCCTCAATCCCATC 1620
DB 521 SerIleSerProArgThrThrAsnSerPheHlsleuProaspPaspProIleProIle 540
QY 1621 ATAAATGGTGGTCCAGAACCGGATAGCCGCTTATTTGGGTTCCCTTCAACATNAGAG 1680
DB 541 IleMetValGlyProGlyThrGlyLysAlaProHelleGlyPheleuGlnHlsArgGln 560
QY 1681 AAATCCAAAGAACCAACCCAGATGAAATTTGAGCAATGTGTTGTTTGGCTGC 1740
DB 561 LysleuGlnGlnGlnHlsProaspGlyAsnPheGlyAlaMetTrpLeuPhePheGlyCys 580
QY 1741 AGGCATTAAGATNAGGATTAATCTATTGAAAGAGCTCAGACATTTCTTAAGCATGGG 1800
DB 581 ArgHlsLysaspArgAspTyrrLeuPheArglysglyleuLeuArgHlsPheleuLysHlsGly 600
QY 1801 ATCTTAATCATCTTAAAGTTTCTCTCTCAAGAGATCCTCTGTGGGAGGAGGAAAGCC 1860
DB 601 IleleuThrHlsleuLysValSerPheSerArgAspAlaProValGlyGlnGlnAla 620
QY 1861 CCAAGCAAGTATGACAAAGCAACATCCAGCTTCATGAGCCAGAGTGGAGATCTTC 1920
DB 621 ProAlaLysTyrrValGlnaspAsnIleGlnleuHlsGlyGlnGlnValAlaArgIleleu 640
QY 1921 CTCGAGAGAACGGCCATATTTATGTGTGTGAGATGCCAAAGATATGGCCAGAGATGA 1980
DB 641 LeuGlnGlnuAsnglyHlsIleTyrrValCysGlyAspAlaLysAsnMetAlaLysAspVal 660
QY 1981 CATGATGCCCTTGTGCAAAATTAATTAAGCAAGAGGTTGAGTGAAGAAATCAGAAAGCATG 2040
DB 661 HlsaspAlaLeuValGlnIleIleSerLysGlnValGlyValGlnLysleuGlnAlaMet 680
QY 2041 AAAACCTGGCCACTTTTAAAGAAAGAAAGCGTCACTTACAGATATTTGGTCA 2094
DB 681 LysThrleuAlaThrleuLysGlnGlnLysArgTyrrleuGlnaspIleTpsSer 698

RESULT 2
US-09-371-347A-2
Sequence 2, Application US/09371347A
GENERAL INFORMATION:
APPLICANT: Roy A.
APPLICANT: Rozen, Rima
APPLICANT: Leclerc, Daniel
APPLICANT: Wilson, Aaron
APPLICANT: Rosenblatt, David
TITLE OF INVENTION: HUMAN METHYLONINE SYNTHASE REDUCTASE:
TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
TITLE OF INVENTION: DEFECTS, CARDIOVASCULAR DISEASE, AND CANCER
FILE REFERENCE: 50004/003003
CURRENT APPLICATION NUMBER: US/09/371.347A

QY 1861 CCAGCAAGTATGTACAAAGCAATCCAGCTTCATGCGCCAGAGTGCGAGAAATCCTC 1920
|
|
|
Db 621 ProAlaLysrYrValGlnAspAsnIleGlnLeuHisIleGlnGlnValAlaArgIleLeu 640
QY 1921 CTCGAGAGAAACGGCCATATTATGTGTGTGAGATGCAAAAGAAATATGCGCCAGATGTA 1980
|
|
|
Db 641 LeuGlnGlnLeuAsnIleGlnIleSerIleSerIleValGlnValGlnValSerGlnVal 660
QY 1981 CACATATCCCTTGCGCAAAATTAATAGCAAAAGAGGTGAGTTGAAATACTAGAGCATG 2040
|
|
|
Db 661 HisAspAlaLeuValGlnIleIleSerIleSerIleValGlnValGlnValSerGlnVal 680
QY 2041 AAACCTGGCCACTTTAAAGAGAAAGAAAGCTACCTTCAGATATTGGTCA 2094
|
|
|
Db 681 LysThrLeuAlaThrLeuLysGlnGlnLysArgIleGlnAspIleTrpSer 698

RESULT 3
US-09-371-347A-21
; Sequence 21, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A.
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE.
; TITLE OF INVENTION: CLONING AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; TITLE OF INVENTION: DEFECTS, CARDIOVASCULAR DISEASE, AND CANCER
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; PRIOR FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 21
; LENGTH: 698
; TYPE: PRT
; ORGANISM: Homo sapiens
US-09-371-347A-21

Alignment Scores:
Pred. No.: 5,68e-67 Length: 698
Score: 3620.00 Matches: 697
Percent Similarity: 100.00% Conservative: 1
Best Local Similarity: 99.86% Mismatches: 0
Query Match: 96.12% Indels: 0
Gaps: 0
DB: 1

us-09-371-347a-41 (1-2097) x US-09-371-347A-21 (1-698)

QY 301 TACACCTACTTTTGCATGCGGGGAGATTAATGATTAACGACTTCAAGACTTGGAGCC 360
|
|
|
Db 101 TyrThrTrpHeCysAsnGlnGlyLysIleIleAspLysArgLeuGlnGlnValAla 120
QY 361 CGGCATTTCATGACACTGGAATGACATGACATGACTGTGTAGTTTAAACTTTGGTTGAG 420
|
|
|
Db 121 ArgHisPheTrpAspThrGlnHisIleAspAspCysValGlnLeuGlnLeuValGln 140
QY 421 CCGTGAGTTGCTGGACCTCGCGCAAGCCCTGAGAAAGCAATTTTGGTCAAGAGACAA 480
|
|
|
Db 141 ProTrpIleAlaGlyLeuTrpProAlaLeuArgLysHisPheArgSerSerArgGln 160
QY 481 GAGGAGTAAGTGGCGCACTCCGCTGGCATCACTTCGATCCTTGAGAGACAGACTTGTG 540
|
|
|
Db 161 GlnGlnIleSerGlnAlaLeuProValAlaSerProAlaSerLeuArgThrAspLeuVal 180
QY 541 AAGTCAGAGCTGCTACACATTGAATCTCAAGTGGAGCTTTCGATTCGATTTCAAGA 600
|
|
|
Db 181 LysSerGlnLeuLeuHisIleGlnSerGlnValGlnLeuLeuArgPheAspAspSerGly 200
QY 601 AGAAGGATTCGAGTTTGAAGCAAAATGACAGTGAACAGCAACCAATCCAATGTGTGA 660
|
|
|
Db 201 ArgLysAspSerGlnValLeuLysGlnAsnAlaValAsnSerAsnGlnSerAsnVal 220
QY 661 ATTGAAGACTTTGAGTCCGCTCACTTACCCGTTGCGTACCCCACTTCACAAGCCTCTTG 720
|
|
|
Db 221 IleGlnAspPheGlnSerSerLeuThrArgSerValProProLeuSerGlnAlaSerLeu 240
QY 721 AATATTCCTGCTTACCCCAAGATATTATTCAGGTATATCTGCAGAGAGTCTTTGGCCAG 780
|
|
|
Db 241 AsnIleProGlnLeuProProGlnLysLeuGlnValHisLeuGlnGlnSerLeuGln 260
QY 781 GAGGAAGCCCAAGTATGTGACTTCAGCAAGATCCAGTTTTCAGAGCCCAATTTCAAG 840
|
|
|
Db 261 GlnGlnSerGlnValSerValThrSerAlaAspProValPheGlnValProIleSerLys 280
QY 841 GCACTTCACTTACTACGAAATGATGCCATTAACCACTGCTGTGATGATTTGACATT 900
|
|
|
Db 281 AlaValGlnLeuThrThrAsnAspAlaIleLysThrThrLeuLeuValGlnLeuAspIle 300
QY 901 TCAAATACAGACTTTTCTTACAGCTCGAGATGCTTCAGCGGTGATCTGCCCTTAAGT 960
|
|
|
Db 301 SerAsnThrAspPheSerTrpGlnProGlnAspAlaPheSerValIleCysProAsnSer 320
QY 961 GATCTGAGGATCAAAAGCTTACTCCAAAGACTGACGCTTGAAGATTAAGAGACATGCG 1020
|
|
|
Db 321 AspSerGlnValGlnSerLeuLeuArgLeuGlnLeuGlnAspLysArgGlnHisCys 340
QY 1021 GTCCCTTTGAAATTAAGGAGACACAAAGAGAGAGAGCTTACCCCAAGATATA 1080
|
|
|
Db 341 ValLeuLeuLysIleLysAlaAspThrLysLeuGlnValAlaThrLeuProGlnHisIle 360
QY 1081 CTCGCGGAGATGTTCTCTCAAGTTTATTTTACCTGGTGTCTTGAATCCAGCAATTCCT 1140
|
|
|
Db 361 ProAlaGlnCysSerLeuGlnPheIlePheThrTrpCysLeuGlnIleValAlaIlePro 380
QY 1141 AAAAAGCAATTTTGGAGCCCTGTGCACTATPCCAGTACAGTGCAGTGTGAAAAGCGCAGG 1200
|
|
|
Db 381 LysLysAlaPheLeuAlaValAlaValAspTrpThrSerAspSerAlaGlnLysArgArg 400
QY 1201 CTACAGAGCTGTGCACTTAACAAAGGAGCCGATTAAGCGCTTTGTAGCGATGCC 1260
|
|
|
Db 401 LeuGlnGlnLeuCysSerLysGlnGlnAlaAlaAspTrpSerArgPheValArgAspAla 420
QY 1261 TGTCCTGCTGTTGGATCTCTCTCTGCTTCCCTTCCGACGACCACTATAGTCTC 1320
|
|
|
Db 421 CysAlaCysLeuLeuAspLeuLeuAlaAlaPheProSerCysGlnProProLeuSerLeu 440
QY 1321 CTGCTGCAACATCTTCTTAACCTTAACCCAGACCAATTCGATGCAAGCTCAAGTTTA 1380
|
|
|
Db 441 LeuLeuGlnHisLeuProLysLeuGlnProArgProLysSerCysAlaSerSerLeu 460

```

OY 1381 TTTCACCCAGAAAGAGCTCATTTGGTCTTCAACATTTGGAAATTTCTGTCACTGACCA 1440
Db PhehIsProGlyLysLeuHisPheValPheAsnIleValGluPheLeuSerThrAlaThr 480
OY 1441 ACAGAGGTTCTGCGGAGGAGAGTATGTACAGGCTGGCTGGCTTTGGTTGGTTCAGTT 1500
Db ThrGluValIleuAaGluGlyValCysThrGlyTyrPheuAlaIleuValAlaSerVal 500
OY 1501 CTTCAGCCAAACATACATGATGATCCCATGAAGAACAGCGGGAAGACCTGGCTCTAAGTA 1560
Db LeuGlnProAsnIleHisAlaSerHisGluAspSerGlyLysAlaIleuAlaProIleVal 520
OY 1561 TTCATCTCTCTCCGAACAACAATTTCTTCCACTTACAGATGACCCCTCATGCCATC 1620
Db SerIleSerProAlaGlyThrThrAsnSerPheHisLeuProAspProSerIleProIle 540
OY 1621 ATAAATGGGGGCTCCGAACCGGAGCTACCCCGTTTATTTGGGTTCTTCAACATAGAGAG 1680
Db IleMetValGlyProGlyThrGlyIleAlaProPheIleGlyPheLeuGlnHisArgGlu 560
OY 1681 AAATCCCAAGAACAAACACCCAGATGGAATTTTGGAGCAATGTGGTTTGTGGCTGC 1740
Db LysLeuGlnGluGlnHisPheAspIleLysAsnPheGlyAlaMetTyrPhePheGlyLys 580
OY 1741 AGGCATAAGATAGGAGATTATCTATTCCAGAAAAGCTCAACATTTCTTAAAGCATGG 1800
Db ArgHisLysAspArgAspTyrLeuPheArgGlyGlyIleuAlaArgHisPheLeuLysHis 600
OY 1801 ATCTTAATCTACTTAAAGGTTTCCCTTCCAGAGATGTGCTGTTGGGAGAGAGGAACC 1860
Db ATCTTAATCTACTTAAAGGTTTCCCTTCCAGAGATGTGCTGTTGGGAGAGAGGAACC 1860
OY 1861 CCAGCAAGTATGTACAGACACATCCAGCTTCAGCTGCGCAGAGTGGCGCAAGATCCTC 1920
Db ProAlaLysTyrValGlnAspAsnIleGlnLeuHisGlyGlnGlnValAlaArgIleLeu 640
OY 1921 CTCACAGAAACCGCCATTTATGTGTGTGAGATGCAAAAGATATGGCCAGAGATGA 1980
Db LeuGlnGluAsnGlnHisIleTyrValCysGlyAspAlaLysAsnMetAlaLysAspVal 660
OY 1981 CATGATGCCCTTGTGCAATTAATAAGCAAGAGGTGGAGTTGAATACTAAGAGCAATG 2040
Db HisAspAlaLeuValGlnIleIleSerLysGluValGlyValGluLysLeuGlnIleVal 680
OY 2041 AAAACCTGCGCACCTTTAAAGAAAGAAAACGCTACCTTCAGATATTGGTCA 2094
Db LysThrLeuAlaThrLeuLysGluLysArgTyrLeuGlnAspIleTyrSer 698

RESULT 4
US-09-371-347A-44
: Sequence 44, Application US/09371347A
: GENERAL INFORMATION:
: APPLICANT: Gravel, Roy A,
: APPLICANT: Rozen, Rima
: APPLICANT: Leclerc, Daniel
: APPLICANT: Wilson, Aaron
: APPLICANT: Rosenblatt, David
: TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
: TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBES:
: FILE REFERENCE: 50004/003003
: CURRENT APPLICATION NUMBER: US/09/371,347A
: PRIOR FILING DATE: 1999-08-10
: PRIOR APPLICATION NUMBER: 09/232,028
: PRIOR FILING DATE: 1999-01-15
: PRIOR APPLICATION NUMBER: 60/071,622
: PRIOR FILING DATE: 1998-01-16
: NUMBER OF SEQ ID NOS: 61
: SOFTWARE: FastSeq for Windows Version 4.0
: SEQ ID NO 44
: LENGTH: 698
: TYPE: PRT
: ORGANISM: Homo sapiens

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US-09-371-347A-44			
Alignment Scores:			
Pred. No.:	8.75e-67	Length:	698
Score:	3610.00	Matches:	696
Percent Similarity:	99.86%	Conservative:	1
Best Local Similarity:	99.71%	Mismatches:	1
Query Match:	95.86%	Indels:	0
DB:	1	Gaps:	0
us-09-371-347a-41 (1-2097) x us-09-371-347A-44 (1-698)			
QY	1	ATGAGAGAGTTTCCTCTTACTATATGCTCACAGCAGGAGGAGCAGGCAAGGCCATTCGAGAA	60
DB	1	MetAgaAgpHeuLeuLeuLeuYzAlatrrgInglnglYghlAlaYsAlaIlelaaglu	20
QY	61	GAATATGTGAGCAAGCTGTGGTAATGGATTTCCTGCAGATCTTCACGTATTAATGAA	120
DB	21	GlmetCysgInglAlaIaValhIsclYpHeSerAlaaspLeuHIsThrIleSerglu	40
QY	121	TCCGATAAGTATGACCTTAAAAACGAAACAGCTCCTCTTGTGTGTGGTTTCAACAG	180
DB	41	SerAapLySlyrAspLeuYethrGluThrIaProlLeuValIaValaSerThrtr	60
QY	181	GGACCCGAGAGCCACCCGACACAGCCCGCAGTTTGTTAAGGAATATACAGAACCAACA	240
DB	61	GlYthrnglYaspProPobAspThrlaArgLysPheValYlsgluIleGlnsngInthr	80
QY	241	CTGCCGGTGAATTCCTTCTGCTCACCGCGGTATGGGTACTGGGTCTCGGTATTCAGAA	300
DB	81	LeuProlValAspPhePheAlaHIsleuAlaGlyrGlyLeuLeuGlyLeuGlyAspSerglu	100
QY	301	TACACCTACTTTTGGCAATGGGGGAGAAATATGATTAACGACTTCAGAGCTTGAGCC	360
DB	101	TyrThrTrYrPheCysAmsnglyGlyLysrIleIleAspLyArgLeuGlnGluLeuGlyAla	120
QY	361	CGGACTTTCATGACACTGAGCATGCAATGACTGTGTAGCTTTAGAACTTGTGCTTGAG	420
DB	121	ArgHIsPheTrYAspThrGlyHIsAlaAspAspCysValGlyLeuGluIleuValIaGlu	140
QY	421	CCGTGGATGTCGGAATCTGGCCAGCCCTCAAAAAGCATTTTAAAGTCACAGAGACAA	480
DB	141	ProThrIleAlaGlyLeuThrProAlaLeuAlaGlyLysHIsPheArgSerIaArgGlyGln	160
QY	481	GAGGAGATTAAGTGGCGCACTCCCGTGGCATCAGCTGCATCCTTGAGACAGACTTGTG	540
DB	161	GlugluIleSerglyAlaLeuProlValaIaSerProlaSerLeuArgHIsPheLeuVal	180
QY	541	AAGTCAAGCTGTCTACACATTAATCTCAAGTCAGACTTCTGAGATTCATGATTCAGGA	600
DB	181	LysSergGluLeuLeuHIsrlIeGluSergInValGluLeuLeuArgPheAspSersery	200
QY	601	AGAAAGCATTCGAGCTTTTGAAGCAAAATGAGTGAAGAACCAATCCCATGTTGTA	660
DB	201	ArgLyAspSergInValLeuYsgInsnAlaValaAsrSerAsmInserAsnValVal	220
QY	661	ATTGAAGACTTGAAGTCTCACTTACCCGTTGGTAAACCCCACTCTCAAGAGCTTCTG	720
DB	221	IleGluAspPheGluSergIeuthrArgSersValProProlLeuSergInlaSersleu	240
QY	721	AATATTCCTGTTTACCCCGAGATATTATTCAGGTACATCTGAGAGAGTCTCTGGCCAG	780
DB	241	AsnIleProGlyLeuProProGluYrLeuGlnValHIsleuGlnGluSergIeuglyGln	260
QY	781	GAGGAAGCCAAAGTATCTGTGACTTCAGAGAGTCCAGTTTTCAGAGTGGCAATTCAAG	840
DB	261	GlugluSergInValSersValThrSersAlaaspProlaPheGlnAlaProlIleSersLys	280
QY	841	GGAGTTCAACTACTACGATGATGCCATTAACCAACCACTCTGCTGTGAATTTGACAT	900
DB	281	AlaValGlnLeuThrThrAsnAspAlaIleYsrThrThrLeuLeuValGluLeuAspIle	300
QY	901	TCAATATACAGACTTTTCTATCAGCCTGAGATGCCCTTACGGGTGATCTGCCCTTAACAGT	960

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Db      |||
301 SerAsnThrAspSerIYrGlnProGlyAspAlaPheSerValIleCysProAsnSer 320
Qy      |||
961 GATTCTGAGGTACAAACCTTACTCCAAAGACTGACGCTTGAGATTAAGATAAGACACTGC 1020
Db      |||
321 AspSerGlnValGlnSerLeuLeuGlnArgLeuGlnLeuGlnAspLysArgGlnHisCys 340
Qy      |||
1021 GTCCCTTTGAAATAAAGGACAGACAAAGAAAGAGAGTACCTTAACCCACAGATATA 1080
Db      |||
341 ValLeuLeuLysIleLysAlaAspThrLysLysGlyAlaThrLeuProGlnHisIle 360
Qy      |||
1081 CTGCGGAGATGTTCTCTCCAGTTCAATTTTAACTGGTGTCTTGAATTCGAGCAATTCCT 1140
Db      |||
361 ProIleGlyCysSerLeuGlnPheIlePheThrTrpCysLeuGlnIleArgAlaIlePro 380
Qy      |||
1141 AAAAAGCATTTTGGACGACCTTGTCGATATACGATGACATGTCATGCTGAAAACGACG 1200
Db      |||
381 LysLysAlaPheLeuArgAlaLeuValAspLysThrSerAspSerAlaGlnLysArgArg 400
Qy      |||
1201 CTACAGAGCTGTGTCAGTAAACAAGGACGACGAGTATAGCCGCTTTGTACGAGATGCC 1260
Db      |||
401 LeuGlnGlnLeuLysSerLysGlnGlyAlaAlaAspLysSerArgPheValArgAspAla 420
Qy      |||
1261 TGTGCTGCTTTGTGATCTCTCTGCTTCCCTTTCTTGCCAGCCACACTCAGTCTC 1320
Db      |||
421 CysAlaCysLeuLeuAspLeuLeuLeuAlaPheProSerCysGlnProProLeuSerLeu 440
Qy      |||
1321 CTGCTGCAACATCTTCTTAACTTCAACCCGACGACATATTCGTCGAGCTCAAGTTTA 1380
Db      |||
441 LeuLeuGlnHisLeuProLysLeuGlnProArgProLysSerCysAlaSerSerLeu 460
Qy      |||
1381 TTTCACCCAGGAAAGCTCCATTTTGTCTTCAACATTTGGAATTTCTGTACTGACCA 1440
Db      |||
461 PheHisProGlyLysLeuHisPheValPheAsnIleValGlnPheLeuSerThrAlaThr 480
Qy      |||
1441 ACAGAGTTCTGCGGAAAGGAGATGTACAGCTGCTGCTGCTGTTGTTGCTTCACTT 1500
Db      |||
481 ThrGlnValLeuArgLysGlyValCysThrGlyTrpLeuAlaLeuValAlaSerVal 500
Qy      |||
1501 CTTCAGCGCAACATACATGATGCCATGCCATGAGACGCGGAAAGCCGCTGCTCCTAAGATA 1560
Db      |||
501 LeuGlnProAsnIleHisAlaSerHisGlnAspSerGlyLysAlaLeuAlaProLysIle 520
Qy      |||
1561 TCCATCTCTCTCGAACAACAATTTCTTCCACTTACAGATGACCCCTCAATCCCATC 1620
Db      |||
521 SerIleSerProArgThrThrAsnSerPheHisLeuProAspAspProSerIleProIle 540
Qy      |||
1621 AATAATGTGGGTCCAGAACCGGACATAGCCCGTTTATTTGGTTCTTACCAATGAGAG 1680
Db      |||
541 IleMetValGlyProGlyThrGlyIleAlaProPheIleGlyPheLeuGlnHisArgGln 560
Qy      |||
1681 AAAATCCAAAGAACCAACCCGATGGAATTTTGAGCAATGAGTGTGTTTGGTGTGC 1740
Db      |||
561 LysLeuGlnGlnGlnHisProAspGlyAsnPheGlyAlaMetTrpLeuPhePheGlyCys 580
Qy      |||
1741 AGGCATTAAGATGAGATTAATCTATTTCAGAAAAGAGCTCAGACATTTCTTAAGCATGG 1800
Db      |||
581 ArgHisLysAspArgAspTrpTrpLeuPheArgLysGlnLeuArgHisPheLeuLysHisGly 600
Qy      |||
1801 ATCTTAATCATCTTAAGAGTTTCTTCTCAAGAGATGCTCTGTTGGGAGGAGGAAGCC 1860
Db      |||
601 IleLeuThrHisLeuLysValIserPheSerArgAspAlaProValGlyGlnGlnGlnAla 620
Qy      |||
1861 CCAGCAAGATGTATGACAAAGACATCATCGCTTCAAGCCGACGAGTGGGAGAGATCTC 1920
Db      |||
621 ProAlaLysTrpValGlnAspAsnIleGlnLeuHisGlyGlnGlnValAlaArgIleLeu 640
Qy      |||
1921 CTCGAGAGAAACGACCATATTATGTGTGTGAGATGCAAGATATATGAGCCAGATGTA 1980
Db      |||
641 LeuGlnGlnLysArgHisIleLysIleTrpValCysGlyAspAlaLysAsnMetAlaLysAspVal 660
Qy      |||
1981 CATGATGCTCTGTGGCAATTAATTAAGCAAGAGGTTGAGTGAATAAATGAAAGCAATG 2040

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Db      |||
661 HisAspAlaLeuValGlnIleIleSerLysGlnValGlyValGlnLysLeuGlnAlaMet 680
Qy      |||
2041 AAAACCTGGCCACTTTAAAGAAAGAAAGAGTACCTTGAGATATTGATCA 2094
Db      |||
681 LysThrLeuAlaThrLeuLysGlnGlnLysArgTrpLeuGlnAspIleTrpSer 698

RESULT 5
US-09-371-347A-46
; Sequence 46, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A.
; APPLICANT: Kozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: DEFECTS, CARDIOVASCULAR DISEASE, AND CANCER
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; PRIOR FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 46
; LENGTH: 697
; TYPE: PRT
; ORGANISM: Homo sapiens
US-09-371-347A-46

Alignment Scores:
Pred. No.: 1,06e-66 Length: 697
Score: 3605.50 Matches: 696
Percent Similarity: 99.86% Conservative: 1
Best Local Similarity: 99.71% Mismatches: 0
Query Match: 95.74% Indels: 1
Gaps: 1

us-09-371-347a-41 (1-2097) x US-09-371-347a-46 (1-697)
Qy      |||
1 ATGAGAGAGTTTCTGTTACTATATGCTTACACAGACGAGCAAGGACATGACAGAA 60
Db      |||
1 MetArgHisPheLeuLeuLeuLysAlaThrGlnGlnGlnGlnAlaIleAlaGln 20
Qy      |||
61 GAAATATGTAGCAAGCTGTGTGTCATGATGATTTTCTGCAATCTTCACTGTATTAGTAA 120
Db      |||
21 GlnMetCysGlnGlnAlaValAlaHisGlyPheSerAlaAspLeuHisCysIleSerGln 40
Qy      |||
121 TCCGATTAAGTATGACCTTAATAAACCAGAACAGCTCTTGTGTTGGTGTTCACACAG 180
Db      |||
41 SerAspLysTrpAspLeuLysTrpHisGlnThrAlaProLeuValValValIleSerThr 60
Qy      |||
181 GGCACCGGAGACCCACCCGACACAGCCCGCAAGTTTGTTAAGAAATACAAACAAACA 240
Db      |||
61 GlyThrIleAspProProAspThrAlaArgLysPheValLysGlnIleGlnAsnGlnThr 80
Qy      |||
241 CTGCGGAGTAAATTTCTTGTCTCACCTCGGTAAGGTTACTGGGTCTCGGTGATTCAAA 300
Db      |||
81 LeuProValAspPhePheAlaHisIleValArgTrpGlyLeuLeuGlyLeuGlyAspSerGln 100
Qy      |||
301 TACACCTACTTTTGCAATGGGGGAGAAATATGATTAACGACTTCAAGAGCTTGAGACC 360
Db      |||
101 TyrThrTrpPheCysAsnGlnGlyLysIleIleAspLysArgLeuGlnGlnLeuGlyAla 120
Qy      |||
361 CGGCAATTTCTATGACTGTGACATGACATGACATGCTGTGTAGATTGAACTTGTGGTTGAG 420
Db      |||
121 ArgHisPheTrpAspThrGlnGlyHisAlaAspAspCysValGlyLeuGlnLeuValGln 140
Qy      |||
421 CCGTGATTCGTGAGCTCTGCGCAGCCCTCAAGAAAGATTTTAGCTTAAGACAGAGCAA 480

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Db      141 ProTrpIlealagIleuTrpProAlaIeuArgIlyshIspheArgSerSerArgGlyGln 160
Qy      481 GAGGAGTAAGTGGGCGACCTCCGGTGGCATCACCTGCATCTTGAGGAGACAGCTTGTG 540
Db      161 GluGluIleSerGlyAlaIeuProValAlaSerProAlaSerLeuArgThrAspIeuVal 180
Qy      541 AAGTCAGAGCTGCTACACATTTGAATCTTCAGTCGAGCTTCTGAGATTGATGATTCAGAGA 600
Db      181 LysSerGluIeuLeuHsiIleGluSerGlnValGluIeuLeuArgPheAspAspSerGly 200
Qy      601 AGAAGAGATTCTGAGGTTTGAAGCAAAATGCAAGTGAACAGCAACCAATCCATGTTGTA 660
Db      201 ArgIlyAspSerGluValIleuLysGlnAsnAlaValAsnSerAsnGlnSerAsnValVal 220
Qy      661 ATTAAGACTTGTGCTCCTACCTTACCCGTTCCGATCCGACCCACCTCCAGACCTCTGTG 720
Db      221 IleGluAspPheGluSerSerLeuThrArgSerValProProLeuSerGlnAlaSerIeu 240
Qy      721 AATATTCCTGTGTTAACCCCGAATATTATACAGGTACATTCAGAGAGTCTTGGCCAG 780
Db      241 AsnIleProGlyIeuProProGluTrpIleuGlnValHsiIleuGlnIleuSerGlyGln 260
Qy      781 GAGAAAGCCAGATATCTGTGATCTTCAGCAGATCCAGTTTCAATGCCAATTCAAAG 840
Db      261 GluGluSerGlnValSerValThrSerAlaAspProValPheGlnValProIleSerIys 280
Qy      841 GCATTTCACTTACTAGCAATGAGTCCATAAACCACCTGCTGTGATGGATTCGACATT 900
Db      281 AlaValGlnIeuThrThrAsnAspAlaIleLysThrThrLeuIeuValGluIeuAspIle 300
Qy      901 TCAATATCAGACTTTTCTTATCAGCTTCGAGATGAGCTTCAGCGTATGCTTGCCTAACAT 960
Db      301 SerAsnThrAspPheSerTyGlnProGlyAspAlaPheSerValIleCysProAsnSer 320
Qy      961 GATTCTGAGGTACAAAGCTTACTCCAAAGACTGCAGCTTGAAGATAAAAGAGACATGTC 1020
Db      321 AspSerGluValGlnSerLeuIeuGlnArgIleuGlnIleuAspIlyAsnGlyHsiIleCys 340
Qy      1021 GTCTTTTGAATTAAGGAGACACAAAGAAAGAGAGCTTACCTTACCCAGATATA 1080
Db      341 ValIeuIeuLysIleLysAlaAspThrIlyLysGlyAlaThrIleuProGlnHsiIle 360
Qy      1081 CCTGCGGAGATGTTCTCTCAGTTCATTTTACTGCTGTGTAATCCGAGCAATTCCT 1140
Db      361 ProAlaGlyCysSerIeuGlnPheIlePheThrTrpCysIeuGlnIleArgAlaIlePro 380
Qy      1141 AAAAAGGATTTTTCGAGCCCTTGTGATATACACAGTACAGTGAAGGAGGAGG 1200
Db      381 LysIlyAlaPheIeuArgAlaIeuValAspTrpThrSerAspSerAlaGluLysArgArg 400
Qy      1201 CTACAGAGAGCTGTGACGTAACCAAGGGGACCCGATTTATACCGCTTGTGACGATGCC 1260
Db      401 LeuIleGlnIleuCysSerIyGlnGlyAlaAlaAspTrpSerArgPheValArgspAla 420
Qy      1261 TGTGCTGCTGTTGGATCTCTCTCTGCTTTCCTTTCGACGACCACTCAGTCTC 1320
Db      421 CysAlaCysIeuLeuAspIeuLeuAlaPheProSerCysGlnProProIeuSerIeu 440
Qy      1321 CTGCTGGAACATCTTCTTAACTTCAACCCAGACCATATTCGTGTGCAAGCTCAAGTTTA 1380
Db      441 LeuIeuGlnHsiIleuProLysIeuGlnProArgProTrpSerCysAlaSerSerSerIeu 460
Qy      1381 TTTTCAACCAAGAAAGCTCATTTTGTCTTCAACATTTGGAATTTTGTCTTACGCCCA 1440
Db      461 PheHsiProGlyLysIeuHsiPheValPheAsnIleValGluPheLeuSerThrAlaThr 480
Qy      1441 ACAGAGCTTTCGCGAAGGAGATGATACAGGCTGCGGCTTGTGTTGCTTCACTT 1500
Db      481 ThrGluValIleuHsiArgLysGlyValCysThrGlyTrpIleuAlaIeuIeuValAlaSerVal 500
Qy      1501 CTTGAGCCCAACATACATGATCCCATGAAAGACAGCGGAAAGCCCTGAGCTCTTAAGATA 1560
Db      501 LeuGlnProAsnIleHsiAlaSerHsiGluIleAspSerGlyLysAlaIeuAlaProLysIle 520

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Qy      1561 TCCATCTCTCCTCGAACAACAATTTCTTCCACTTACAGATGACCCCTCAATCCCATC 1620
Db      521 SerIleSerProArgThrThrAsnSerPheHsiIleuProAspProSerIleIleProIle 540
Qy      1621 ATTAATGCTGCGTCCAGAAACCGGCATAGCCCGCTTATTTGGGTTCTTCAACATAGAGAG 1680
Db      541 IleMetValGlyProGlyThrGlyIleAlaProPheIleGlyPheIeuGlnHsiArgGlu 560
Qy      1681 AAATTCGAAGAAACAACCCAGATGGAATTTTGGACCAATGNGTGTGTTTTTGGGCTGC 1740
Db      561 LysIeuGlnIleuGlnHsiProAspGlyAsnPheGlyAlaMetTrp---PhePheGlyCys 579
Qy      1741 AGCATTAAGATATAGGATTTATCTATTCAAGAAAGAGCTCAGACATTTCTTAAGCATGGG 1800
Db      580 ArgHsiLysAspAlaGlyAspTrpIleuPheArgIlyIleuLeuArgHsiPheIeuLysHsiGly 599
Qy      1801 ATCTTAACTCATCTTAAAGGTTTCTTCTTCAAGATGCTCTGTTGGGAGAGAGAACCC 1860
Db      600 IleuThrHsiIleuLysValSerPheSerArgspAlaProValGlyGluGluGluAla 619
Qy      1861 CCAGCAAGATATGTAACAAGACAATCATCAGCTTCATGCGCAGCGTGGGAGAAATCCTC 1920
Db      620 ProAlaLysTrpValGlnAspAsnIleGlnIeuHsiGlyGlnGlnValAlaArgIleIeu 639
Qy      1921 CTCGAGGAGAAACGSCCATATTATGTTGTGAGATGCAAGATGCAAGATATGCGCAAGATGTA 1980
Db      640 LeuGlnIleuAsnGlyHsiIleTyValCysGlyAspAlaIlyAsnMetAlaLysAspVal 659
Qy      1981 CATGATGCCCTTGTGCAATTAATTAAGCAAAAGAGGTGTGAGTTGAAAACTGAAGCAATG 2040
Db      660 HisAspAlaIeuValGlnIleIleSerTyGlnValGlyValGlyLysIeuGlnAlaMet 679
Qy      2041 AAAACCTGCGCACTTTTAAAAAGAAAGAAAGCGTCACTTCAGGATATTTGGTCA 2094
Db      680 LysThrIleuAlaThrIleuLysGluIlyLysArgTrpIleuGlnAspIleTrpSer 697

RESULT 6
US-09-371-347A-48
; Sequence 48, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A,
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE.
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; CURRENT FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 48
; LENGTH: 689
; TYPE: PRF
; ORGANISM: Homo sapiens
US-09-371-347A-48

Alignment Scores:
Pred. No.: 2,77e-64 Length: 689
Score: 3477.00 Matches: 686
Percent Similarity: 98.57% Conservative: 2
Best Local Similarity: 98.28% Mismatches: 1
Query Match: 92.33% Indels: 9
DB: 1 Gaps: 6
us-09-371-347a-41 (1-2097) x US-09-371-347A-48 (1-689)

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; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; CURRENT FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FASTSEQ for Windows Version 4.0
; SEQ ID NO 22
; LENGTH: 682
; TYPE: PR1
; ORGANISM: Caenorhabditis elegans
US-09-371-347A-22

Alignment Scores:
Pred. No.: 3,47e-16 Length: 682
Score: 914.00 Matches: 236
Percent Similarity: 48.30% Conservative: 119
Best Local Similarity: 32.11% Mismatches: 288
Query Match: 24.27% Indels: 92
DB: 1 Gaps: 15

us-09-371-347a-41 (1-2097) x US-09-371-347A-22 (1-682)
QY 1 ATGAGAGAGTTTCTGTTACTATGCTTACACAGCAGGAGCAGCAAGCCATCCGAGA 60
DB 1 MethraspPheLeuIleAlaPheGlySerGlnThrGlnAlaGlnThrIleAlaLys 20
QY 61 GAATATGATGAGAGCTGTGTACATGATTTTCTGAGATTTTCTGATTTTCTGATTTGTA 120
DB 21 SerLeuLysGlnLysAlaGlnLeuIleGlyLeuThrProAlaGlnAlaLeuAspGln 40
QY 121 TCCGATATGATGAGCTTAAACCGAACAAGCTCTCTGTTGGTGTCTTACACAG 180
DB 41 AsnGlnLysLysPheAsnLeuAsnGlnLysLysLeuGlyAlaIleValSerSerThr 60
QY 181 GGCACCGGAGACCCACCCGACACAGCCCGCAAGTTTGTAAAGAAATACAGAACAA 240
DB 61 GlyAspGlyAspAlaProAspAsnCyAlaArgPheValArgArgIleAsnArgAsnSer 80
QY 241 CTGCGGATGATTTCTTGTCTCACTGCGGATGAGTTAGTGGTCTGGGTGATTCAGA 300
DB 81 LeuGlnAsnGlnLysLysLeuAsnLysPheValLeuLeuGlnLysLysAspSerAsn 100
QY 301 TACACACTTATTTGCAATGGGGGAGATATTTGTAACACATTCAGACCTTGGAGCC 360
DB 101 TySerSerLysArgLysThrIleProArgLysIleAspLysGlnLeuThrIleAlaGlnLysAla 120
QY 361 CGCATTTTATGACACTGACAGACAGACAGATGATCTGTAGTGTGTTGAATCTTGTTGAG 420
DB 121 AsnArgLeuPheAspArgAlaGlnAlaAspAsnGlnValGlnLeuGlnLeuGlnValGlnLys 140
QY 421 CCGGATGATTTGCTGACTGTGGCCAGCTCTCAAGAAAGCATTTTAGTCAAGCAGAGAGAA 480
DB 141 ProThrLysGlnLysPhePheAlaThrLeuAlaSerArgPheAspIleSerAlaAspLys 160
QY 481 GAGAGATTAAGTGGCGCACTCCCGGTGACATCACTGATCCTTGGAGAGACCTTGTG 540
DB 161 MetAsn-----AlaIleThrGlnLysSerSerAsnLeuLysLeuAsnGlnVal 175
QY 541 AAGTCAGAG-----CTGCTACACATTTGAATCTCAAGTCGAGCTTCTGAGATTCGAT 591
DB 176 LysThrGlnGlnGlnLysLysAlaLeuLeuGlnLysArgIleGlnLysAspGlnLysSerAsp 195
QY 592 GATTCAGAGAA----- 603

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DB 196 AspGlnGlyArgGlyArgValIleGlyIleAspMetLeuIleProGlnIleTyrAspTyr 215
QY 604 AAGATTCTGAGTTTGGAGCAAAATGCACTGAGCAACCAATCCAAATGTTGTAAT 663
DB 216 ProLysLeuSerLeuLeuLysGlySerGlnThrLeuSerAsnAspGlnLysLeu----- 233
QY 664 GAAGCTTTGAGTCTCACTTACCCGTTGCTGATCC-----CGACTCTCACA 711
DB 234 -----ArgValProIleAlaProGlnProPheIleVal 244
QY 712 GCCTCTGCAATATTCCTGTTTACCCCA-----GATATTTACAGTACAT 759
DB 245 SerSerValSerAsnArgLysLeuProGlnLysPheThrLysLeuGlnLysPheGlnLysLeu 264
QY 760 CTGACAGAGTCTCTGGCCAGAGAGAAAGCAAGTATCTGACTTACAGCAGATTCAGT 819
DB 265 LysMetProGlnValIleThrLysProPheGlnValIleValIleSerAlaGlnPheVal 284
QY 820 TTTCAGTCCCAATTTTCAAGAGAGTTCACCTTACGATGATGCCATTAACCAACT 879
DB 285 ThrAsp--ProPheSerLys-----LysIleLysThrLys 295
QY 880 CTGCTGTGAGATTTGACATTTCAAT-----ACAGACTTTTCTTATCAGCTGAGAT 933
DB 296 ArgMetIleThrValAspPheGlyAspHisAlaIleGlnLeuGlnTyrGlnProGlyAsp 315
QY 934 GCCTTACAGCTGATCTGCTTCAACAGTATTTGAGTACAAAGCTTCTCAAGAGACTG 993
DB 316 AlaIleTyrPheCysValProAsnProAlaLeuGlnValIleAsnPheIleLysLysArgCys 335
QY 994 CAGCTTGAAGATTAAGAGACACTGCGTCTTTGAAAATAAGGACAGACAAAGAG 1053
DB 336 GlyValLeuAspIleAlaAspGlnGlnCysGlnLeuSerIleAsnProLysThrGlnLys 355
QY 1054 AAAGAGACTTACTACCCAGCAATATACCTGCGGAGATTTCTTCAAGCTTCAATTTTACC 1113
DB 356 IleAsnAlaGlnIleProGlnLysIleValIleLysIleThrThrLeuAsnGlnMetPheThr 375
QY 1114 TGGTGTCTGTAATCCAGACATTTCTTAAAGGACATTTTGCAGCCCTTGTGACTAT 1173
DB 376 ThrCysLeuAspIleArgArgAlaProGlyArgProLeuIleArgValLeuAlaGlnLys 395
QY 1174 ACCAGTACAGTCTGTAAGAACGAGGCTACAGAGCTGTCAGATTAACAGGGGACACC 1233
DB 396 ThrSerAspProAsnGlnLysArgArgLeuLeuGlnLysSerAlaGlnLysMetLys 415
QY 1234 GATTATAGCCGCTTGTGACAGATGCTGCTGCTGTTGATTCCTCTGCTGCTTTC 1293
DB 416 AspPheThrAspPheValArgThrProGlnLysSerLeuAlaAspMetLeuPheAlaPhe 435
QY 1294 CTTTCTTGCAGCCAGCACTGATCTCTGCTGCAACATCTTCTTAACTTCAACCCAGA 1353
DB 436 ProAsnValLysProProValAspArgLeuIleGlnLeuLeuProArgLeuIleProArg 455
QY 1354 CCATATCTGTGCAAGCTCAAGTTTATTTACCCAGAGAAAGCTCCATTTTGTCTTCAAC 1413
DB 456 ProTyrSerMetSerSer-----TyrIleAsnArgLysAlaArgLeuIleTyrSer 472
QY 1414 ATTGTGGAATTTCTGCTACTGACCAACAAGAGTTCTGCGAAGAGGATGTGTAAGGC 1473
DB 473 GlnMetGlnPheProAlaThrAspGlyArgArgHisSerArgLysGlyLeuAlaThrAsp 492
QY 1474 TGGCTGCTGTTGTTGTTGCTTCAAGTTCTTCAAGCCAAACATATGATCCATGAAGAC 1533
DB 493 TrpLeuAsnSerLeu----- 497
QY 1534 AGCGGAAAGCCCTGCTCTTAAGATATCTCTCTGCAACAAATTTCTTTCAC 1593
DB 498 -----ArgIleGlyAspLysValGlnAlaLeuGlnLysGlnProAlaArgPheArg 514
QY 1594 TTACCA-----GATGACCCCTCAATCCCATCATATGATGATGAGT 1632

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Db      78  ArgSnnIleIleValaPheTyrcIlySerclnThrglYThrIaGlunIuPhealAnsnyrg  97
QY      64  ATATGTGAGCAAGCT-----GTGGTACATGAGATTTCGCAGATCTTCATGTATT  114
      :: :: ||| :: :: ||| ||||| |||
Db      98  LeuSerIysaAapIaAhIaArgTyrclYMetArGlyMetSerIaIaAsP-----  113
QY      115  AGTGAATCCGAAATAGTATGACCTA-----AAACCGAAGCAAGCT  153
      :: :: ||||| |||
Db      114  -----ProGluGluTyrAspLeuIlaAspLeuSerSerIeuProGluIuIlaAspSnhla  131
QY      154  CCTCTTGTGTGTGTGGTTTTCACCGGGACCGGAGACCAACCCGACACAGCCCGCAAG  213
      :: :: ||| :: :: ||| :: :: |||
Db      132  LeuValIaIaPheCysMetclalThrTyrclYgluGluYaaSProThrAspSnhlaIaGlnAsP  151
QY      214  TTTGTATGAGAAATATGAAACCAACCAATGCCGGGTGATTTCTTGTCACCTGGGAGAT  273
      ||| ||| :: :: ||| :: :: |||
Db      152  PheTyrAspTrpLeuGlnIuThrAspAlaIaSPeu-----SerclYalIaIysPhe  168
QY      274  GGGTTACTCGGGTCTCGGTGATTCAGAAATACACTTTTGCATGGGGGAGAAATTAAT  333
      :: :: ||||| :: :: ||| :: :: |||
Db      169  AlaValaPhegluYAsnIuYAsnIuYThrTyrGluIuSPhenaaIaMetclYIlySerVala  188
QY      334  GATTAACGACTTCGAAGACTTCGAGACCCGGCAATTCTATGACACTGACATGCAAGATAC  393
      ||| ||||| :: :: ||||| ||| :: :: |||
Db      189  AspIySaAgluLeuGluIuLeuGluYAlaGlnArgIlePheGluLeuGluYAspAsp  208
QY      394  TGTGTAGGTTTAAAGACTTGATGGTGAAGCCGTGATTTGTGCACTTCGACAGCCCTCAGA  453
      ||| ||||| ||| |||
Db      209  AspglYAsnLeuGlnIuAspPheIleThrItrpArgIuGlnIuPheTrpAlaIaValCys  228
QY      454  AAGCAATTTTAGTCAAGACAGACAGCAACAAGAGAAATGTCGGCGCACTCCCGGTGCATCA  513
      :: :: ||||| |||
Db      229  GluIuSPhE-----GlyValaGluAlaThrclYglu  238

```

[illegible][illegible]

000

Db 353 GlnGluSerAsnLysLys-----HisProPheProCysProThrSerTyr 367


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Oy 1099 CAGTTCATTTTACCTGGNGTCTGAAATCCGAGCAATTTCTTAAGGCAATTTTGGCA 1158
    : : : : : : : : : : : : : : : : : : : : : : : : : : : : : :
Db 368 ArgThrAlaLeuThrTyrTyrLeuaspIleThrAsnProPheArgThrAsnValLeuTyr 387
Oy 1159 GCCCTTGAGCATATACAGTACAGTACGTCTGTAAGGCGCAGGCTTACAGAGCTGTGCACT 1218
    : : : : : : : : : : : : : : : : : : : : : : : : : : : : : :
Db 388 GluLeuAlaGlnTyrAlaSerCdpProSerGluGlnLeuLeuLeuLeuLeuLeuLeuLeu 407
Oy 1219 AAACAGGGGCGAGCCGAT-----TATAGCCGCTTTGACGAGATGCTGTGCTGCTTG 1272
    : : : : : : : : : : : : : : : : : : : : : : : : : : : : : :
Db 408 SerSerGlyGluGlyLysGluLeuTyrLeuSerTrpValGluAlaArgHisIle 427
Oy 1273 TTGATCTCCCTCCCTGCTTCCCTTCCGACGACGACGACGCTGCTGCTGCAACAT 1332
    : : : : : : : : : : : : : : : : : : : : : : : : : : : : : :
Db 428 LeuAlaIleLeuGlnAspCysProSerLeuArgProIleAspHisLeuGluLeu 447
Oy 1333 CTTCCTAACTTTCACCAACGACATATTCGTGTGCAAGCTCAAGTTTATTCACCCAGGA 1392
    : : : : : : : : : : : : : : : : : : : : : : : : : : : : : :
Db 448 LeuProArgLeuGlnAlaArgTyrTyrSerIleAlaSerSerSerLysValHisProAsn 467
Oy 1393 AAGCTCCATTTGTCTTCAACATTTGTGATTTCTGTCTACTGCCACACAGAGGTTCTG 1452
    : : : : : : : : : : : : : : : : : : : : : : : : : : : : : :
Db 468 SerValHisIleCysAlaValAlaGluTyrGluThrLysAlaGlyArg-----Ile 485
Oy 1453 CGGAAGGAGTATGATACAGGCTGGCTGCTGTTGTTGCTTCACTTCTTCAACCCAAAC 1512
    : : : : : : : : : : : : : : : : : : : : : : : : : : : : : :
Db 486 AsnLysGlyValAlaThrAsnTrpLeu-----ArgAlaLysGluPro--- 499
Oy 1513 ATACATGATCCCATGAAGACGCGGAAGCCCTGCTCCTAAGATATCCATCTCTCTCT 1572
    : : : : : : : : : : : : : : : : : : : : : : : : : : : : : :
Db 500 -----ValGlyGluAsnGlyLysArgAlaLeuValProMetPheVal----- 513
Oy 1573 CGAACACAAATTTCTTCCACTTACAGATGACCCCTCAATCCCATATAATGTGGGT 1632
    : : : : : : : : : : : : : : : : : : : : : : : : : : : : : :
Db 514 ---ArgLysSerGlnPheArgLeuProPheLysAlaThrTrpProValIleMetValGly 532
Oy 1633 CCAGGAACCGGACGCGCCGTTTATGGGTTCCACAAACATAGAGAGAAATCCCAAGAA 1692
    : : : : : : : : : : : : : : : : : : : : : : : : : : : : : :
Db 533 ProGlyThrGlyValAlaProPheIleGlyPheIleGlnGluArgAlaTrpLeuArgGln 552
Oy 1693 CAACACCCAGATGGAATTTTGGAGCAATGTGGTTGTTTGGCTGCGAGCATTAAGAT 1752
    : : : : : : : : : : : : : : : : : : : : : : : : : : : : : :
Db 553 GlnGlyLysGlu-----ValGlyGluThrLeuLeuTyrTyrGlyCysArgArgSerAsp 570
Oy 1753 AGGATTTATCTATTCAAAAAGAGCTCAAGACATTTCTTAAGCATGGAATCTTAATCAT 1812
    : : : : : : : : : : : : : : : : : : : : : : : : : : : : : :
Db 571 GluAspTyrLeuTyrArgGluGluLeuAlaGlnPheHisArgAspGlyAlaLeuThrGln 590
Oy 1813 CTAAAGTTTCTCTTCAAGAGATCTCTGTGGGAGGAGGAGCCCGCAAGAAATAT 1872
    : : : : : : : : : : : : : : : : : : : : : : : : : : : : : :
Db 591 LeuAsnValAlaPheSerArg-----GluGlnSerHisIleLysValTyr 604
Oy 1873 GTACAAAGACATCCAGCTTCATGGCCAGCAGAGTGGCGAGAAATCTCTCCAGAGAAC 1932
    : : : : : : : : : : : : : : : : : : : : : : : : : : : : : :
Db 605 ValGlnHisLeuLeuLysGlnAspArgGlnHisLeuTrpLys--LeuIleGlnGly 623
Oy 1933 GGCATATTTATGTGTGTGAGATCAAAAGATATGSCCAAGATGTACATGATCCCTT 1992
    : : : : : : : : : : : : : : : : : : : : : : : : : : : : : :
Db 624 AlaHisIleTyrValCysGlyAspAlaArgAsnMetAlaArgAspValGlnAsnThrPhe 643
Oy 1993 GTGCAATTAATAGCAAGAGGTTGAGATGAAAACATAGAAATGAATAAAACCTGCGC 2052
    : : : : : : : : : : : : : : : : : : : : : : : : : : : : : :
Db 644 TyrAspIleValAlaGlnLeuGlyAlaMetGlnHisAlaGlnAlaValAspTyrIleLys 663
Oy 2053 ACTTTAAAGAAAGAAAGAGCTACCTTCAGATATTTGGTCA 2094
    : : : : : : : : : : : : : : : : : : : : : : : : : : : : : :
Db 664 LysLeuMetThrLysGlyArgTyrSerLeuAspValTrpSer 677

```

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; APPLICANT: Gravel, Roy A,
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN MENTIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; TITLE OF INVENTION: DEFECTS, CARDIOVASCULAR DISEASE, AND CANCER
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; PRIOR FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 60
; LENGTH: 41
; TYPE: PRT
; ORGANISM: Homo sapiens
; US-09-371-347A-60

Alignment Scores:
Pred. No.: 0.0534 Length: 41
Score: 215.00 Matches: 41
Percent Similarity: 100.00% Conservative: 0
Best Local Similarity: 100.00% Mismatches: 0
Query Match: 5.71% Indels: 0
Gaps: 0

US-09-371-347A-41 (1-2097) x US-09-371-347A-60 (1-41)

Oy 1858 GCCCAGGAAGTATGTACAGACACACATCTTCACTTACGCGAGGTGGCGAGATC 1917
    : : : : : : : : : : : : : : : : : : : : : : : : : : : : : :
Db 1 AlaProAlaLysTyrValGlnAspAsnIleGlnLeuHisGlyGlnGlnValAlaArgIle 20
Oy 1918 CTCCTCGAGAGAAAGGCGCATATTATGCTGTGAGATGCAAGAAATATGAGCCAAAGAT 1977
    : : : : : : : : : : : : : : : : : : : : : : : : : : : : : :
Db 21 LeuLeuGlnGluAsnGlyHisIleTyrValCysGlyAspAlaLysAsnMetAlaLysAsp 40
Oy 1978 GTA 1980
    : : : : : : : : : : : : : : : : : : : : : : : : : : : : : :
Db 41 Val 41

RESULT 10
US-09-371-347A-54
; Sequence 54, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A,
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN MENTIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; TITLE OF INVENTION: DEFECTS, CARDIOVASCULAR DISEASE, AND CANCER
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; PRIOR FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 54
; LENGTH: 29
; TYPE: PRT
; ORGANISM: Homo sapiens
; US-09-371-347A-54

Alignment Scores:

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Pred. No.: 0.85 Length: 29
Score: 158.00 Matches: 29
Percent Similarity: 100.00% Conservative: 0
Best Local Similarity: 100.00% Mismatches: 0
Query Match: 4.20% Indels: 0
DB: 1 Gaps: 0

us-09-371-347a-41 (1-2097) x US-09-371-347A-54 (1-29)
QY 259 GCTACCTGGCGTATGGGTTACTGGGTTCTCGGTATTCAGAAATACACCTACTTTGCAAT 318
Db 1 AAtAtSteuArGyTgYglYleuGlYleuGlYAspserGluYrThrTYrPheCYasn 20
QY 319 GGGGGAAGATTAATTGATTAACGACTT 345
Db 21 GYgYlYpStlelleAspLYsAlrGleu 29

RESULT 11
US-09-371-347A-58
; Sequence 58, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; FILE REFERENCE: 50004/003003
; CURRENT FILING DATE: 1999-08-10
; PRIOR FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 58
; LENGTH: 22
; TYPE: PRT
; ORGANISM: Homo sapiens
US-09-371-347A-58

Alignment Scores:
Pred. No.: 6.3 Length: 22
Score: 117.00 Matches: 22
Percent Similarity: 100.00% Conservative: 0
Best Local Similarity: 100.00% Mismatches: 0
Query Match: 3.11% Indels: 0
DB: 1 Gaps: 0

us-09-371-347a-41 (1-2097) x US-09-371-347A-58 (1-22)
QY 1612 ATCCCATCAATATGTTGGTCCAGAACCGCATACCCCGTTATGGTTCCTCAAA 1671
Db 1 IllerollellewetValGlyProGlyThrclyllelelaProPhelelleGlyPheleuGln 20
QY 1672 CATAGA 1677
Db 21 HisArg 22

RESULT 12
US-09-371-347A-53
; Sequence 53, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
```

```
; TITLE OF INVENTION: DEFECTS, CARDIOVASCULAR DISEASE, AND CANCER
; FILE REFERENCE: 50004/003003
; CURRENT FILING DATE: 1999-08-10
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1998-01-16
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 53
; LENGTH: 23
; TYPE: PRT
; ORGANISM: Homo sapiens
US-09-371-347A-53

Alignment Scores:
Pred. No.: 6.32 Length: 23
Score: 116.00 Matches: 23
Percent Similarity: 100.00% Conservative: 0
Best Local Similarity: 100.00% Mismatches: 0
Query Match: 3.08% Indels: 0
DB: 1 Gaps: 0

us-09-371-347a-41 (1-2097) x US-09-371-347A-53 (1-23)
QY 160 GTTGTGGTTCTACACGAGGACCGGACCGGACGACGCGGAGTTGTT 219
Db 1 ValValAlaValSerThrThrGlyThrGlyAspProProAspThrAlaArgLYsPheVal 20
QY 220 AAGGAATA 228
Db 21 LysGluIle 23

RESULT 13
US-09-371-347A-25
; Sequence 25, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; FILE REFERENCE: 50004/003003
; CURRENT FILING DATE: 1999-08-10
; PRIOR FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 25
; LENGTH: 18
; TYPE: PRT
; ORGANISM: Homo sapiens
US-09-371-347A-25

Alignment Scores:
Pred. No.: 10.6 Length: 18
Score: 109.00 Matches: 18
Percent Similarity: 100.00% Conservative: 0
Best Local Similarity: 100.00% Mismatches: 0
Query Match: 2.89% Indels: 0
DB: 1 Gaps: 0

us-09-371-347a-41 (1-2097) x US-09-371-347A-25 (1-18)
QY 1714 GAGCAATGTTGTTGTTTGGCTGACGATAGAGATTGGGATTATCTATTC 1767
```

```
Db      1 GlyAlaMetTrpLeuPheGlyCysArgHisLysAspArgTyrLeuPhe 18
RESULT 14
US-09-371-347A-55
; Sequence 55, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Rozen, Roy A.
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; PRIOR FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 55
; LENGTH: 19
; TYPE: PRT
; ORGANISM: Homo sapiens
US-09-371-347A-55

Alignment Scores:
Pred. No.:      12.5      Length:      19
Score:          104.00     Matches:      19
Percent Similarity: 100.00% Conservative: 0
Best Local Similarity: 100.00% Mismatches: 0
Query Match:    2.76%     Indels:      0
DB:             1         Gaps:         0

us-09-371-347A-41 (1-2097) x US-09-371-347A-55 (1-19)
QY      1342 CTTCACCCGAGCAATTCCTGTGCAAGCTCAAGTTATTTCACCCGAGAAAGCTC 1398
Db      1 LeuGlnProArgProTyrSerCysAlaSerSerLeuPheHisProGlyLysLeu 19

RESULT 15
US-09-371-347A-52
; Sequence 52, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Rozen, Roy A.
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; PRIOR FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 52
; LENGTH: 20
; TYPE: PRT
; ORGANISM: Homo sapiens
US-09-371-347A-52

Alignment Scores:
Pred. No.:      16.7      Length:      20
Score:          96.00     Matches:      20
```

```
Percent Similarity: 100.00%      Conservative: 1
Best Local Similarity: 95.00%     Mismatches: 0
Query Match:      2.55%          Indels: 0
DB:               1             Gaps: 0

us-09-371-347A-41 (1-2097) x US-09-371-347A-52 (1-20)
QY      10 TTCTGTTACTATATGCTACACAGGAGGAGCAAGCCATCGCAGAAATATGCT 69
Db      1 PheLeuLeuLeuTyrAlaThrGlnGlnGlnGlnGlnAlaValAlaLeuGluGluMetCys 20

RESULT 16
US-09-371-347A-57
; Sequence 57, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Rozen, Roy A.
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; PRIOR FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 57
; LENGTH: 17
; TYPE: PRT
; ORGANISM: Homo sapiens
US-09-371-347A-57

Alignment Scores:
Pred. No.:      28.1      Length:      17
Score:          87.00     Matches:      17
Percent Similarity: 100.00% Conservative: 0
Best Local Similarity: 100.00% Mismatches: 0
Query Match:    2.31%     Indels:      0
DB:             1         Gaps:         0

us-09-371-347A-41 (1-2097) x US-09-371-347A-57 (1-17)
QY      1450 CTGCGAAGGAGGATGATGACAGGCTGCGCTGTGTTGTTGCTTCAGTT 1500
Db      1 LeuArgLysGlyValCysThrGlyTrpLeuAlaLeuLeuValAlaSerVal 17

RESULT 17
US-09-371-347A-56
; Sequence 56, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Rozen, Roy A.
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; PRIOR FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
```

```

; SEQ ID NO 56
; LENGTH: 14
; TYPE: PRT
; ORGANISM: Homo sapiens
US-09-371-347A-56

Alignment Scores:
Pred. No.: 72.3 Length: 14
Score: 68.00 Matches: 14
Percent Similarity: 100.00% Conserved: 0
Best Local Similarity: 100.00% Mismatches: 0
Query Match: 1.81% Indels: 0
DB: 1 Gaps: 0

US-09-371-347A-41 (1-2097) x US-09-371-347A-56 (1-14)
QY 1402 TTGTCTTCAACATTGTGGAATTTCTGTACTGCCACACACA 1443
DB 1 PheValPheAsnIleValGluPheLeuSerThrIleAlaThrThr 14

RESULT 18
US-09-371-347A-22
; Sequence 22, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A.
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; CURRENT FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FASTSEQ for Windows Version 4.0
; SEQ ID NO 22
; LENGTH: 682
; TYPE: PRT
; ORGANISM: Caenorhabditis elegans
US-09-371-347A-22

Alignment Scores:
Pred. No.: 2.79 Length: 682
Score: 62.50 Matches: 113
Percent Similarity: 33.27% Conserved: 61
Best Local Similarity: 21.61% Mismatches: 175
Query Match: 1.68% Indels: 175
DB: 1 Gaps: 29

US-09-371-347A-41 (1-2097) x US-09-371-347A-22 (1-682)
QY 1353 TTTGGTTGAAGTTAGTAAGATG---TTGAGACAGAGACTGAGTGGCTGGCAAGA 1297
DB 168 SerAsnIleuLysIleuAsnGlnValIysThrGluGluGluLysValAlaLeuLeuGlnLys 187
QY 1296 AGGGAAAGCAGAGAGATCCAAACAGCAGCAGCATCTTCGTCAAAAGCGGCTATA 1237
DB 188 ArgIleGluAspGluIleuSerAspAspGluGlyArgGly-----ArgVal 202
QY 1236 ATGGGCTGCCCTTTTACTGCACAGCTCTGTAGCTTGGCTTTTCAGACGTGTACT 1177
DB 203 IleGlyI-----IleAspMetLeuIleProGluHisIlyrAspIlyrProGlu 217
QY 1176 GGATATGCAACAGGCGTCGCAAAATGCTTTTGAATGCTCGAATTCAGACA 1117
DB 218 IleSerIleuLysGlySerGln-----Thr 226

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QY 1116 CCAGTAAATGAATGAGAGAGAAACATCCCGAGATATGCTGGGTAAGTAGCTCC 1057
DB 227 LeuSerAsnIleuLysIleuVal-Pro-----IleAlaIle 239
QY 1056 TTTCTTTGTGTCTGCTGCTTTATTTCAAAAGCAGCTGCTCTTTATCTTCAAG 997
DB 239 OGlnProPheIleValSerSerValSerAsnArg-----LysLeuProGluAspThr 256
QY 996 CTGACGCTTTGGAGTAGGCTTTGTACTCTGAGATCACTGTGAGAGATCAAGCTGAA 937
DB 256 IlySerLeuGluIleProGluAsnLys-----LysMetProGluValIleThr----- 271
QY 936 GGCATCTCCAGGCTGATAGGAAAGTCTGATTGTAATGTCATTCACAGCAGAGT 877
DB 272 -----LysProPheGluVal-----Le 277
QY 876 GGTATTTATGACATCATTCGTAGTAAGTTGAATGCTTGAATGGCACTGAAAC 817
DB 277 uValIleValSerIleGluPheValThrAspProPheSerIleValIleLysThrIlyrAspGly 297
QY 816 TGGAATCGTGAAGTACACAGAT-----ACTGGCTTCTCCCGGCGACAGACCTCC-- 765
DB 297 tIleThrValAspPheIleAspHisAlaIleGluLeuGlnIlyrGluProGluAspAlaIle 317
QY 764 -----TGC-----AGATGTACTG 751
DB 317 eTyrPheCysValIleProAsnProAlaLeuGluValaIleuValIleuLysArgCys----- 335
QY 750 TAAATATTCTGGGGGTAAACCAAGATATTCAAGAGGCTTTGTAG-----AGTG 700
DB 336 -----GlyValIleuAspIleAlaAspGlnGlnCysGluLeuSerIleAsnPr 351
QY 699 GGGTACCAGAGGGGTAAAGGAGCTCAAGCTC-----TCAATTCAACATTTGA 649
DB 351 OlyThrGluIlyleIleAsnAlaGlnIleProGluHisValaIleHisValIleThrIleuAla 371
QY 648 TTGGTGTCTGTCACTGATTTTCTTCATTAACCTCAGAACTCTTCTTCGTGAATCATC 589
DB 371 gHisMetPheThrThrCysLeuAspIleArgAlaIleProGluIlyr-----ArgProIleuIle 390
QY 588 GAATCTCAGAACTCGACTTGAGT-----TCAATGTCTAG 553
DB 390 gValIleuAlaGluSerThrSerAspProAsnGluLysArgArgLeuLeuGluLeuLysSer 410
QY 552 CAGC-----TGTGACTTCACAAAGCTGTGCTCCTCAAGATCAGAGTGA 511
DB 410 rAlaGlnGlyMetLysAspPheThrAspPheValArgIleProGlyLeuSerIleuAlaAs 430
QY 510 TGCCACCGGAGTGCAGCACTTATCTCTCTTGTCTCTGCTTAC-----CTAAATAG 457
DB 430 pMetLeuPheAlaPheProAsnValLys-----ProProValAspArgLeuIleGluLe 448
QY 456 CTTTCTGAGGGCTGCGCAGAGTCCAGCAATCCAGGCTCAACCAAGTTCTTAACCTAC 397
DB 448 uLeuProArgLeuIleProArgProIlyrSerMetSerIlyrGluAsnArgLys----- 466
QY 396 ACAATCATCTGCATGTCACATGTCATGAATAATCCGGGCTCCAAAGCTTGAAGCTGTT 337
DB 467 -----AlaArgLe 469
QY 336 ATCAATATTCCTCCCATTCATTCGAAAGAGTAGTATTCGAATCAACGAGCCCACTAA 277
DB 469 u-----IleTyrSerGluMetGluPheProAlaThr 479
QY 276 CCATATCCGAGGTGAGCAAAAGATCAACCGCAGAGTGTGCTGTATTTCTTAACTAC 217
DB 479 rAspGlyArgArgHisSerArgIlySerGlyLeuAlaIleAspIlyr-----LeuAs 495
QY 216 AAATTCGCG-----GCTGTGTCGGGGGTCTCCGGTG----- 183
DB 495 nSerIleuArgIleGlyAspLysValGlnValIleuGlyLysGluProAlaArgPheArgLe 515
QY 182 -----CCCGTGTAGAAACCAACCAACAGAGA----- 153

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Db 515 uProLeuclYmethrlysaanserAlaGlyLysLeuProLeuLeuMetValGlyPr 535
      |||::: |||
      :|::: |||
Qy 152 -----GCTTTTCGGTTTTCAGTCTACTTA----- 126
      |||::: |||
Db 535 oGlyThrGlyValserValPheLeuSerPheLeuHisPheLeuArgLysLeuLysGlnAs 555
      |||::: |||
Qy 125 -----TCGGA-TTCACATATACAGTGAAGATC-----TGCAGAAATCC-- 88
      |||::: |||
Db 555 pSerProSerAspPheValAspValProArgValLeuPheGlyCysArgAspSerSe 575
      |||::: |||
Qy 87 -----ATGTACACAGCTTCACATATTTCTTCGACATGGCTTCGCTGTC 38
      |||::: |||
Db 575 rValAspAlaIleTyrMetSerGluLeuGluMetPheValSerGluGlyIleLeuThrAs 595
      |||::: |||
Qy 37 CCTGCTG 31
      |||:::
Db 595 pleuile 597

RESULT 19
US-09-371-347A-34
; Sequence 34, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A,
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; TITLE OF INVENTION: DEFECTS, CARDIOVASCULAR DISEASE, AND CANCER
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; CURRENT FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 34
; LENGTH: 18
; TYPE: PRT
; ORGANISM: Oryctolagus cuniculus
US-09-371-347A-34

Alignment Scores:
Pred. No.: 76 Length: 18
Score: 61.00 Matches: 10
Percent Similarity: 72.22% Conservative: 3
Best Local Similarity: 55.56% Mismatches: 5
Query Match: 1.62% Indels: 0
Gaps: 0
DB: 1

us-09-371-347A-41 (1-2097) x US-09-371-347A-34 (1-18)

Qy 1714 GGAGCAATGCTGTTGTTTGGCTGCAGGCAATAGATAGGATTATCTATTC 1767
      |||::: |||
      :|::: |||
Db 1 GlyArgMetThrLeuValPheGlyCysArgHisProGluGluAspHisLeuTyr 18

RESULT 20
US-09-371-347A-35
; Sequence 35, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A,
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; TITLE OF INVENTION: DEFECTS, CARDIOVASCULAR DISEASE, AND CANCER
; FILE REFERENCE: 50004/003003
```

```
; CURRENT APPLICATION NUMBER: US/09/371,347A
; CURRENT FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 35
; LENGTH: 18
; TYPE: PRT
; ORGANISM: Gallus gallus
US-09-371-347A-35

Alignment Scores:
Pred. No.: 76 Length: 18
Score: 61.00 Matches: 10
Percent Similarity: 72.22% Conservative: 3
Best Local Similarity: 55.56% Mismatches: 5
Query Match: 1.62% Indels: 0
Gaps: 0
DB: 1

us-09-371-347A-41 (1-2097) x US-09-371-347A-35 (1-18)

Qy 1714 GGAGCAATGCTGTTGTTTGGCTGCAGGCAATAGGATTATCTATTC 1767
      |||::: |||
      :|::: |||
Db 1 GlyAspMetIleLeuLeuPheGlyCysArgHisProAspMetAspHisIleTyr 18

RESULT 21
US-09-371-347A-26
; Sequence 26, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A,
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; TITLE OF INVENTION: DEFECTS, CARDIOVASCULAR DISEASE, AND CANCER
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; CURRENT FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 26
; LENGTH: 18
; TYPE: PRT
; ORGANISM: Homo sapiens
US-09-371-347A-26

Alignment Scores:
Pred. No.: 85.2 Length: 18
Score: 58.00 Matches: 9
Percent Similarity: 66.67% Conservative: 3
Best Local Similarity: 50.00% Mismatches: 6
Query Match: 1.54% Indels: 0
Gaps: 0
DB: 1

us-09-371-347A-41 (1-2097) x US-09-371-347A-26 (1-18)

Qy 1714 GGAGCAATGCTGTTGTTTGGCTGCAGGCAATAGGATTATCTATTC 1767
      |||::: |||
      :|::: |||
Db 1 GlyGluThrIleuLeuTyrTyrGlyCysArgArgSerAspGluAspTyrLeuTyr 18

RESULT 22
US-09-371-347A-30
; Sequence 30, Application US/09371347A
; GENERAL INFORMATION:
```

```

; APPLICANT: Gravel, Roy A.
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; CURRENT FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 30
; LENGTH: 18
; TYPE: PRT
; ORGANISM: Aspergillus niger
US-09-371-347A-30

Alignment Scores:
Pred. No.: 85.2 Length: 18
Score: 58.00 Matches: 10
Percent Similarity: 66.67% Conservative: 2
Best Local Similarity: 55.56% Mismatches: 6
Query Match: 1.54% Indels: 0
DB: 1 Gaps: 0

us-09-371-347a-41 (1-2097) x US-09-371-347A-30 (1-18)
Oy 1714 GGAGCAATGCTGTTTGGCTGCAGCATTAAGATAGGATTATCTATTC 1767
Db 1 G1yArGthrVal1leuPheNeg1CyArG1ySerArG1uaSphe1euYr 18
```

```

RESULT 23
US-09-371-347A-38
; Sequence 38, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A.
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; CURRENT FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 38
; LENGTH: 18
; TYPE: PRT
; ORGANISM: Thiocapsa roseopersicina
US-09-371-347A-38
```

```

Alignment Scores:
Pred. No.: 88.4 Length: 18
Score: 57.00 Matches: 10
Percent Similarity: 66.67% Conservative: 2
Best Local Similarity: 55.56% Mismatches: 6
Query Match: 1.51% Indels: 0
DB: 1 Gaps: 0

us-09-371-347a-41 (1-2097) x US-09-371-347A-38 (1-18)
```

```

Oy 1714 GGAGCAATGCTGTTTGGCTGCAGCATTAAGATAGGATTATCTATTC 1767
Db 1 G1yArGsn1rPhe1lePheNeg1yAsnArGh1sPhe1sArGsphe1euYr 18

RESULT 24
US-09-371-347A-32
; Sequence 32, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A.
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; CURRENT FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 32
; LENGTH: 18
; TYPE: PRT
; ORGANISM: Homo sapiens
US-09-371-347A-32

Alignment Scores:
Pred. No.: 95.2 Length: 18
Score: 55.00 Matches: 9
Percent Similarity: 66.67% Conservative: 3
Best Local Similarity: 50.00% Mismatches: 6
Query Match: 1.46% Indels: 0
DB: 1 Gaps: 0

us-09-371-347a-41 (1-2097) x US-09-371-347A-32 (1-18)
```

```

Oy 1714 GGAGCAATGCTGTTTGGCTGCAGCATTAAGATAGGATTATCTATTC 1767
Db 1 G1yArGwetr1he1uValPheNeg1CyArGArGPrObSpeluaSp1s1leYr 18

RESULT 25
US-09-371-347A-29
; Sequence 29, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A.
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; CURRENT FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 29
; LENGTH: 18
; TYPE: PRT
; ORGANISM: Vigna radiata
US-09-371-347A-29
```

```
Alignment Scores:
Pred. No.: 98.8 Length: 18
Score: 54.00 Matches: 8
Percent Similarity: 72.22% Conservative: 5
Best Local Similarity: 44.44% Mismatches: 5
Query Match: 1.43% Indels: 0
DB: 1 Gaps: 0

us-09-371-347a-41 (1-2097) x US-09-371-347a-29 (1-18)

QY 1714 GGAGCAATGCTGTTGTTTGGCTGCAGGCAATAGGATTAATCAATTC 1767
Db 1 GlyProAlaLeuPhePheGlyCysArgSerGlnMetAspPheLeuTyr 18

RESULT 26
US-09-371-347a-28
; Sequence 28, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Rozen, Roy A,
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; CURRENT FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 28
; LENGTH: 18
; TYPE: PRT
; ORGANISM: Drosophila melanogaster
US-09-371-347a-28

Alignment Scores:
Pred. No.: 102 Length: 18
Score: 53.00 Matches: 8
Percent Similarity: 66.67% Conservative: 4
Best Local Similarity: 44.44% Mismatches: 6
Query Match: 1.41% Indels: 0
DB: 1 Gaps: 0

us-09-371-347a-41 (1-2097) x US-09-371-347a-28 (1-18)

QY 1714 GGAGCAATGCTGTTGTTTGGCTGCAGGCAATAGGATTAATCAATTC 1767
Db 1 GlyIleuSerIleLeuTyrPheGlyCysArgSerGlnAspTyrIleTyr 18

RESULT 27
US-09-371-347a-61
; Sequence 61, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Rozen, Roy A,
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; CURRENT FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
```

```
; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 61
; LENGTH: 9
; TYPE: PRT
; ORGANISM: Homo sapiens
US-09-371-347a-61

Alignment Scores:
Pred. No.: 721 Length: 9
Score: 51.00 Matches: 9
Percent Similarity: 100.00% Conservative: 0
Best Local Similarity: 100.00% Mismatches: 0
Query Match: 1.35% Indels: 0
DB: 1 Gaps: 0

us-09-371-347a-41 (1-2097) x US-09-371-347a-61 (1-9)

QY 2068 AAAGCTACCTTCAGGATATTGTC 2094
Db 1 LysArgTyrLeuGlnAspIleTyrSer 9

RESULT 28
US-09-371-347a-36
; Sequence 36, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Rozen, Roy A,
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; CURRENT FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 36
; LENGTH: 18
; TYPE: PRT
; ORGANISM: Escherichia coli
US-09-371-347a-36

Alignment Scores:
Pred. No.: 110 Length: 18
Score: 51.00 Matches: 9
Percent Similarity: 61.11% Conservative: 2
Best Local Similarity: 50.00% Mismatches: 7
Query Match: 1.35% Indels: 0
DB: 1 Gaps: 0

us-09-371-347a-41 (1-2097) x US-09-371-347a-36 (1-18)

QY 1714 GGAGCAATGCTGTTGTTTGGCTGCAGGCAATAGGATTAATCAATTC 1767
Db 1 GlyIleuSerIleLeuPhePheGlyAsnProHisPheThrGlnAspPheLeuTyr 18

RESULT 29
US-09-371-347a-37
; Sequence 37, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Rozen, Roy A,
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
```

```

; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; TITLE OF INVENTION: DEFECTS, CARDIOVASCULAR DISEASE, AND CANCER
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; PRIOR FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 37
; LENGTH: 18
; TYPE: PRT
; ORGANISM: Saccharomyces cerevisiae
US-09-371-347A-37

Alignment Scores:
Pred. No.: 110 Length: 18
Score: 51.00 Matches: 8
Percent Similarity: 72.22% Conservative: 5
Best Local Similarity: 44.44% Mismatches: 5
Query Match: 1.35% Indels: 0
Gaps: 0

US-09-371-347A-41 (1-2097) x US-09-371-347A-37 (1-18)
OY 1714 GGAGCAATGGTGTGTTTGGCTGCAGCATAGGATATATCTATTC 1767
Db 1 GlyluValPheLeuTyLeuGlySerArgHisLysArgLugluTyLeuTy 18

RESULT 30
US-09-371-347A-48
; Sequence 48, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A,
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; CURRENT FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 48
; LENGTH: 689
; TYPE: PRT
; ORGANISM: Homo sapiens
US-09-371-347A-48

Alignment Scores:
Pred. No.: 4.23 Length: 689
Score: 50.00 Matches: 23
Percent Similarity: 39.33% Conservative: 12
Best Local Similarity: 25.84% Mismatches: 38
Query Match: 1.34% Indels: 17
Gaps: 2

US-09-371-347A-41 (1-2097) x US-09-371-347A-48 (1-689)
OY 1894 GAAGCTGAGATGTTGCTTGTACATACACTTGTGGGCTCTCTCCCAACAGAGCAT 1835
Db 418 AspAlaCysAlaCysLeuLeuAspLeuLeuAlaPheProSerCysGlnProLeu 437
```

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OY 1834 CTCTTGAGAGAAACCTTAGATAGATTAGATCCCATGCTTAAGAAATGCTGAGCT 1775
Db 438 SerLeuLeuLeuGlnHisLeuProLysLeuGln----- 448
OY 1774 CTCTTGAGATAGATAATCCCTATCCCTTAGCTGCAGCCAAAAACAAACA--CATTGC 1717
Db 449 -----ProArgProTyrSerCysAlaSerSerLeuPheHisPro 462
OY 1716 TCCAAAATTCACATCGGAGTGTGTTCTTGAGATTCTCTCT--AGTTGTAGAAACC 1660
Db 463 GlyLysLeuHisPheValPheAsnIleValGluPheLeuSerThrAlaThrGluVal 482
OY 1659 AATTAACGGGCTATGCCGCTCTCG 1633
Db 483 LeuArgLysGlyValCysThrGlyTyr 491

RESULT 31
US-09-371-347A-46
; Sequence 46, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A,
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; CURRENT FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 46
; LENGTH: 697
; TYPE: PRT
; ORGANISM: Homo sapiens
US-09-371-347A-46

Alignment Scores:
Pred. No.: 4.18 Length: 697
Score: 50.00 Matches: 23
Percent Similarity: 39.33% Conservative: 12
Best Local Similarity: 25.84% Mismatches: 38
Query Match: 1.34% Indels: 17
Gaps: 2

US-09-371-347A-41 (1-2097) x US-09-371-347A-46 (1-697)
OY 1894 GAAGCTGAGATGTTGCTTGTACATACACTTGTGGGCTCTCTCCCAACAGAGCAT 1835
Db 419 AspAlaCysAlaCysLeuLeuAspLeuLeuAlaPheProSerCysGlnProLeu 438
OY 1834 CTCTTGAGAGAAACCTTAGATAGATTAGATCCCATGCTTAAGAAATGCTGAGCT 1775
Db 439 SerLeuLeuLeuGlnHisLeuProLysLeuGln----- 449
OY 1774 CTCTTGAGATAGATAATCCCTATCCCTTAGCTGCAGCCAAAAACAAACA--CATTGC 1717
Db 450 -----ProArgProTyrSerCysAlaSerSerLeuPheHisPro 463
OY 1716 TCCAAAATTCACATCGGAGTGTGTTCTTGAGATTCTCTCT--AGTTGTAGAAACC 1660
Db 464 GlyLysLeuHisPheValPheAsnIleValGluPheLeuSerThrAlaThrGluVal 483
OY 1659 AATTAACGGGCTATGCCGCTCTCG 1633
Db 484 LeuArgLysGlyValCysThrGlyTyr 492
```



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Query Match: 1.34% Indels: 17
DB: 1 Gaps: 2
us-09-371-347a-41 (1-2097) x US-09-371-347a-42 (1-698)
QY 1894 GAAGCTGAGATGTTCTTGTACATACCTTGTGGGGCTTCTCTCCCAAGAGACAT 1835
   ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| |||
Db 419 AsplacysalacysleuleuAspleuleuAlaPheProSerCysGlnProleu 438
QY 1834 CTCTTGAGAGAAACCTTATGATGATGATGATCCATGCTTAAAGAAATGTCTGACT 1775
   ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| |||
Db 439 SerleuleuLeuGluHsleuProLysleuGln----- 449
QY 1774 CTCTTGAGATAGATATCCCTATCTTATGCTGACGCCAAAGAACACCA--CATTGC 1717
   ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| |||
Db 450 -----ProArgProLysSerCysAlaSerSerleuPheHisPro 463
QY 1716 TCCAAATTTCCATCTGGGTGTCTTCTTGAGATTCTCTCT--ATGTTGTAGAACCC 1660
   ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| |||
Db 464 GlyLysleuHisPheValPheAsnIleValGluPheLeuSerThrAlaThrThrGluVal 483
QY 1659 AATAACGGGGCTATGCCGGTCTCTGG 1633
   ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| |||
Db 484 LeuArgLysGlyValCysThrGlyTyr 492

RESULT 35
US-09-371-347a-44
; Sequence 44, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A,
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; CURRENT FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 44
; LENGTH: 698
; TYPE: PRT
; ORGANISM: Homo sapiens
US-09-371-347a-44

Alignment Scores:
Pred. No.: 4.18 Length: 698
Score: 50.00 Matches: 23
Percent Similarity: 39.33% Conservative: 12
Best Local Similarity: 25.84% Mismatches: 38
Query Match: 1.34% Indels: 17
Gaps: 2
us-09-371-347a-41 (1-2097) x US-09-371-347a-44 (1-698)
QY 1894 GAAGCTGAGATGTTCTTGTACATACCTTGTGGGGCTTCTCTCCCAAGAGACAT 1835
   ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| |||
Db 419 AsplacysalacysleuleuAspleuleuAlaPheProSerCysGlnProleu 438
QY 1834 CTCTTGAGAGAAACCTTATGATGATGATGATCCATGCTTAAAGAAATGTCTGACT 1775
   ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| |||
Db 439 SerleuleuLeuGluHsleuProLysleuGln----- 449
QY 1774 CTCTTGAGATAGATATCCCTATCTTATGCTGACGCCAAAGAACACCA--CATTGC 1717
   ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| |||
Db 450 -----ProArgProLysSerCysAlaSerSerleuPheHisPro 463
```

```
QY 1716 TCCAAATTTCCATCTGGGTGTCTTCTTGAGATTCTCTCT--ATGTTGTAGAACCC 1660
   ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| |||
Db 464 GlyLysleuHisPheValPheAsnIleValGluPheLeuSerThrAlaThrThrGluVal 483
QY 1659 AATAACGGGGCTATGCCGGTCTCTGG 1633
   ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| |||
Db 484 LeuArgLysGlyValCysThrGlyTyr 492

RESULT 36
US-09-371-347a-27
; Sequence 27, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A,
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; CURRENT FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 27
; LENGTH: 18
; TYPE: PRT
; ORGANISM: Oryctolagus cuniculus
US-09-371-347a-27

Alignment Scores:
Pred. No.: 118 Length: 18
Score: 49.00 Matches: 8
Percent Similarity: 61.11% Conservative: 3
Best Local Similarity: 44.44% Mismatches: 7
Query Match: 1.30% Indels: 0
Gaps: 0
us-09-371-347a-41 (1-2097) x US-09-371-347a-27 (1-18)
QY 1714 GAAGCATGATGTTCTTGTGCTGACGACATAGAGATGAGATTATCTATTC 1767
   ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| |||
Db 1 GlyGluThrleuLeuTyryGlyCysArgArgAlaIlaGluAspTyrlLeuYr 18

RESULT 37
US-09-371-347a-23
; Sequence 23, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A,
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; CURRENT FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 23
; LENGTH: 677
```

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      : TYPE: PRT
      : ORGANISM: Homo sapiens
US-09-371-347A-23

Alignment Scores:
Pred. NO.:          4.43           Length:        677
Score:             49.00          Matches:       20
Percent Similarity: 45.12%         Conservative: 17
Best Local Similarity: 24.38%       Mismatches:   27
Query Match:       1.31%            Indels:     18
DB:                1              Gaps:         4

us-09-371-347A-41 (1-2097) x US-09-371-347A-23 (1-677)

QY    695 ACCGACGGGTAGTAGGACTCAAAAGTCTTCATTACAACATTCGATTGGTGCTGTTCC 636
      ::||| ||:::||::||| |::| |::| |::| |::| |::| |::| |::| |::|
Db    13 SerGIuaIlaValAlaGlUglU---ValSerLeupePheSerMetThrAspMetlleuephe 31

QY    635 ACTGGA-----TTTTCCTCAAACCTCAGAATCCCTTCTCT 600
      :::| |::| |::| |::| |::| |::| |::| |::| |::| |::| |::|
Db    32 SerleullelvalGlyleuleuthrTyrrTpPieleupheargLyalyelGelUlvaI 51

QY    599 CCTGATCATCGAATCTCGAACGATCGACTTGAGATTCAATGTGTAGACAGCTTGACTTTC 540
      ||||| |::| |::| |::| |::| |::| |::| |::| |::| |::| |::|
Db    52 ProGUUpheThrltyllleglnthrleuthr-----SerSeValArgJuseSerthe 69

QY    539 ACA-----AGGTCTGTCTCAAGATGACGATGCAGGCCAGCGG 501
      |||:::||||| |::| |::| |::| |::| |::| |::| |::| |::|
Db    70 ValGluMyMeLylEythrcLYarGanlleileValphenyGilySercInthrGly 89

QY    500 AGTGCG 495
      :::|||
Db    90 ThrAla 91

RESULT 38
US-09-371-347A-33
Sequence 33, Application US/09371347A
GENERAL INFORMATION:
APPLICANT: Gravel, Roy A,
APPLICANT: Rozen, Rima
APPLICANT: Leclerc, Daniel
APPLICANT: Wilson, Aaron
APPICANT: Rosenblat, David
TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE;
TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBER
FILE REFERENCE: 50004/003003
CURRENT APPLICATION NUMBER: US/09/371,347A
CURRENT FILING DATE: 1995-08-10
PRIOR APPLICATION NUMBER: 09/232,028
PRIOR FILING DATE: 1999-01-15
PRIOR APPLICATION NUMBER: 60/071,622
NUMBER OF SEQ ID NOS: 61
SOFTWARE: fastSeq for Windows Version 4.0
SEQ ID NO 33
LENGTH: 18
TYPE: PRT
ORGANISM: Homo sapiens
US-09-371-347A-33

Alignment Scores:
Pred. No.:          150           Length:        18
Score:             42.00          Matches:       8
Percent Similarity: 62.50%         Conservative: 2
Best Local Similarity: 50.00%       Mismatched:   6
Query Match:       1.12%            Indels:      0
DB:                1              Gaps:         0

us-09-371-347A-41 (1-2097) x US-09-371-347A-33 (1-18)

QY    1720 ATGTCGTTGTTTTTGGCTGCGAGCATTAAGATAGGATTATCTATTC 1767
      ||||| |::| |::| |::| |::| |::| |::| |::| |::| |::| |::|

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Db 3 MetValleuValPheGlyCysArgCysSerGlnLeuAspHisLeuTy 18
RESULT 39
US-09-371-347A-31
; Sequence 31, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Rozen, Roy A.
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF
; TITLE OF INVENTION: DEFECTS, CARDIOVASCULAR DISEASE, AND CANCER
; FILE REFERENCE: 50004/003003
; CURRENT FILING DATE: US/09/371.347A
; CURRENT FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 31
; LENGTH: 18
; TYPE: PRT
; ORGANISM: Homo sapiens
US-09-371-347A-31
Alignment Scores:
Pred. No.: 160 Length: 18
Score: 40.00 Matches: 7
Percent Similarity: 62.50% Conservative: 3
Best Local Similarity: 43.75% Mismatches: 6
Query Match: 1.06% Indels: 0
DB: 1 Gaps: 0
us-09-371-347A-41 (1-2097) x US-09-371-347A-31 (1-18)
Qy 1720 ATGTGGTGTGTTTTGGCTGCAGGCATTAAGGATTAATCATATTC 1767
Db 3 MetValleuValPheGlyCysArgGlnSerLysIleAspHisLeuTy 18
RESULT 40
US-09-371-347A-55
; Sequence 55, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A.
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF
; TITLE OF INVENTION: DEFECTS, CARDIOVASCULAR DISEASE, AND CANCER
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371.347A
; CURRENT FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 55
; LENGTH: 19
; TYPE: PRT
; ORGANISM: Homo sapiens
US-09-371-347A-55
Alignment Scores:
Pred. No.: 180 Length: 19
Score: 34.50 Matches: 19
Match: 19.17% Mismatches: 6
Query Match: 1.06% Indels: 0
DB: 1 Gaps: 0

```

Percent Similarity: 50.00% Conservative: 3
Best Local Similarity: 35.00% Mismatches: 5
Query Match: 0.92% Indels: 5
DB: 1 Gaps: 1

us-09-371-347a-41 (1-2097) x us-09-371-347a-55 (1-19)

QY 1756 CCTATCTATGCTGCGAGCAAAACACACATGCTCAAAATTCATCTGGGT 1697
DB 3 PtoArgProTyrSerCysAlaSerSerSerIleu-----PheHisProGly 17

RESULT 41
US-09-371-347a-39

; Sequence 39, Application US/09371347A

; GENERAL INFORMATION:

; APPLICANT: Gravel, Roy A.

; APPLICANT: Rozen, Rima

; APPLICANT: Leclerc, Daniel

; APPLICANT: Wilson, Aaron

; APPLICANT: Rosenblatt, David

; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:

; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE

; FILE REFERENCE: 50004/003003

; CURRENT FILING DATE: 1999-08-10

; PRIOR APPLICATION NUMBER: 09/232,028

; PRIOR FILING DATE: 1999-01-15

; PRIOR APPLICATION NUMBER: 60/071,622

; PRIOR FILING DATE: 1998-01-16

; NUMBER OF SEQ ID NOS: 61

; SOFTWARE: FastSeq for Windows Version 4.0

; SEQ ID NO 39

; LENGTH: 19

; TYPE: PRT

; ORGANISM: Pisum sativum

US-09-371-347a-39

Alignment Scores:

Pred. No.: 183 Length: 19

Score: 34.00 Matches: 6

Percent Similarity: 53.85% Conservative: 1

Best Local Similarity: 46.15% Mismatches: 6

Query Match: 0.90% Indels: 0

DB: 1 Gaps: 0

us-09-371-347a-41 (1-2097) x us-09-371-347a-39 (1-19)

QY 1714 GGAGCAATGTGTTGTTTGGCTGCGACATAGAGAT 1752

DB 1 GlyLeuAlaTrpLeuPheLeuGlyValAlaSerValasp 13

RESULT 42
US-09-371-347a-60

; Sequence 60, Application US/09371347A

; GENERAL INFORMATION:

; APPLICANT: Gravel, Roy A.

; APPLICANT: Rozen, Rima

; APPLICANT: Leclerc, Daniel

; APPLICANT: Wilson, Aaron

; APPLICANT: Rosenblatt, David

; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:

; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE

; FILE REFERENCE: 50004/003003

; CURRENT FILING DATE: 1999-08-10

; PRIOR APPLICATION NUMBER: 09/232,028

; PRIOR FILING DATE: 1999-01-15

; PRIOR APPLICATION NUMBER: 60/071,622

; PRIOR FILING DATE: 1998-01-16

; NUMBER OF SEQ ID NOS: 61

; SOFTWARE: FastSeq for Windows Version 4.0

; SEQ ID NO 60
; LENGTH: 41
; TYPE: PRT
; ORGANISM: Homo sapiens
US-09-371-347a-60

Alignment Scores:

Pred. No.: 95 Length: 41

Score: 32.00 Matches: 7

Percent Similarity: 61.11% Conservative: 4

Best Local Similarity: 38.89% Mismatches: 7

Query Match: 0.86% Indels: 0

DB: 1 Gaps: 0

us-09-371-347a-41 (1-2097) x us-09-371-347a-60 (1-41)

QY 112 TACAGTGAAGATCTGCGAGAAATTCATGTACACAGCTTGCTACATATTTCTT 59
DB 5 TyrValGlnAspAsnIleGlnLeuHsGlyGlnGlnValAlaArgIleLeu 22

RESULT 43

US-09-371-347a-40

; Sequence 40, Application US/09371347A

; GENERAL INFORMATION:

; APPLICANT: Gravel, Roy A.

; APPLICANT: Rozen, Rima

; APPLICANT: Leclerc, Daniel

; APPLICANT: Wilson, Aaron

; APPLICANT: Rosenblatt, David

; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:

; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE

; FILE REFERENCE: 50004/003003

; CURRENT FILING DATE: 1999-08-10

; PRIOR APPLICATION NUMBER: 09/232,028

; PRIOR FILING DATE: 1999-01-15

; PRIOR APPLICATION NUMBER: 60/071,622

; NUMBER OF SEQ ID NOS: 61

; SOFTWARE: FastSeq for Windows Version 4.0

; SEQ ID NO 40

; LENGTH: 18

; TYPE: PRT

; ORGANISM: Spinacia oleracea

US-09-371-347a-40

Alignment Scores:

Pred. No.: 209 Length: 18

Score: 31.00 Matches: 5

Percent Similarity: 62.50% Conservative: 0

Best Local Similarity: 62.50% Mismatches: 3

Query Match: 0.82% Indels: 0

DB: 1 Gaps: 0

us-09-371-347a-41 (1-2097) x us-09-371-347a-40 (1-18)

QY 1714 GGAGCAATGTGTTGTTTGGC 1737

DB 1 GlyLeuAlaTrpLeuPheLeuGly 8

RESULT 44

US-09-371-347a-36

; Sequence 36, Application US/09371347A

; GENERAL INFORMATION:

; APPLICANT: Gravel, Roy A.

; APPLICANT: Rozen, Rima

; APPLICANT: Leclerc, Daniel

; APPLICANT: Wilson, Aaron

; APPLICANT: Rosenblatt, David

; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:

; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE

; FILE REFERENCE: 50004/003003

; CURRENT FILING DATE: 1999-08-10

; PRIOR APPLICATION NUMBER: 09/232,028

; PRIOR FILING DATE: 1999-01-15

; PRIOR APPLICATION NUMBER: 60/071,622

; PRIOR FILING DATE: 1998-01-16

; NUMBER OF SEQ ID NOS: 61

; SOFTWARE: FastSeq for Windows Version 4.0

```

; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; CURRENT FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 36
; LENGTH: 18
; TYPE: PRT
; ORGANISM: Escherichia coli
US-09-371-347A-36

```

```

Alignment Scores:
Pred. No.: 214          Length: 18
Score: 30.00           Matches: 4
Percent Similarity: 85.71% Conservative: 2
Best Local Similarity: 57.14% Mismatches: 1
Query Match: 0.80%      Indels: 0
DB: 1                   Gaps: 0

```

us-09-371-347a-41 (1-2097) x US-09-371-347A-36 (1-18)

```

QY      1967 ATATTCTTGATCTCCAC 1947
DB      5 LeuPhepGlyAsnProHis 11

```

RESULT 45

```

US-09-371-347A-59
; Sequence 59, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A,
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; TITLE OF INVENTION: DEFECTS, CARDIOVASCULAR DISEASE, AND CANCER
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; CURRENT FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 59
; LENGTH: 6
; TYPE: PRT
; ORGANISM: Homo sapiens
US-09-371-347A-59

```

```

Alignment Scores:
Pred. No.: 1.08e+03      Length: 6
Score: 29.00            Matches: 6
Percent Similarity: 100.00% Conservative: 0
Best Local Similarity: 100.00% Mismatches: 0
Query Match: 0.77%      Indels: 0
DB: 1                   Gaps: 0

```

us-09-371-347a-41 (1-2097) x US-09-371-347A-59 (1-6)

```

QY      1822 TCCTTCTCAGAGATGCT 1839
DB      1 SerPheSerArgAspAla 6

```

Search completed: May 9, 2005, 15:30:35
 Job time : 27 secs

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GenCore version 5.1.6
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OM protein - protein search, using sw model

Run on: May 9, 2005, 15:25:29 ; Search time 1 Second
(without alignments)
4.206 Million cell updates/sec

Title: us-09-371-347A-2
Perfect score: 3624
Sequence: 1 MRRFLLYATQGGAKAIAE.....AMKTLATLKEEKRYLQDIWS 698

Scoring table: BLOSUM62
Gap 10.0 , Gapext 0.5

Searched: 34 seqs, 6026 residues

Total number of hits satisfying chosen parameters: 34

Minimum DB seq length: 0
Maximum DB seq length: 2000000000

Post-processing: Minimum Match 0%
Maximum Match 100%
Listing first 45 summaries

Database : US09371347A.pep:*

Pred. No. is the number of results predicted by chance to have a
score greater than or equal to the score of the result being printed,
and is derived by analysis of the total score distribution.

SUMMARIES

Result No.	Score	Query Match	Length	ID	Description
1	3624	100.0	698	1 US-09-371-347A-2	Sequence 21, App1
2	3624	100.0	698	1 US-09-371-347A-21	Sequence 21, App1
3	3620	99.9	698	1 US-09-371-347A-42	Sequence 42, App1
4	3614	99.7	698	1 US-09-371-347A-44	Sequence 44, App1
5	3609.5	99.6	697	1 US-09-371-347A-46	Sequence 46, App1
6	2883	79.6	689	1 US-09-371-347A-48	Sequence 48, App1
7	914	25.2	682	1 US-09-371-347A-22	Sequence 22, App1
8	731.5	20.2	677	1 US-09-371-347A-23	Sequence 23, App1
9	215	5.9	41	1 US-09-371-347A-60	Sequence 60, App1
10	158	4.4	29	1 US-09-371-347A-54	Sequence 54, App1
11	117	3.2	22	1 US-09-371-347A-58	Sequence 58, App1
12	116	3.2	23	1 US-09-371-347A-53	Sequence 53, App1
13	109	3.0	19	1 US-09-371-347A-55	Sequence 55, App1
14	104	2.9	19	1 US-09-371-347A-55	Sequence 55, App1
15	100	2.8	20	1 US-09-371-347A-52	Sequence 52, App1
16	87	2.4	17	1 US-09-371-347A-57	Sequence 57, App1
17	68	1.9	14	1 US-09-371-347A-56	Sequence 56, App1
18	61	1.7	18	1 US-09-371-347A-34	Sequence 34, App1
19	61	1.7	18	1 US-09-371-347A-35	Sequence 35, App1
20	58	1.6	18	1 US-09-371-347A-26	Sequence 26, App1
21	58	1.6	18	1 US-09-371-347A-30	Sequence 30, App1
22	57	1.6	18	1 US-09-371-347A-38	Sequence 38, App1
23	55	1.5	18	1 US-09-371-347A-32	Sequence 32, App1
24	54	1.5	18	1 US-09-371-347A-29	Sequence 29, App1
25	53	1.5	18	1 US-09-371-347A-28	Sequence 28, App1
26	51	1.4	18	1 US-09-371-347A-61	Sequence 61, App1
27	51	1.4	18	1 US-09-371-347A-37	Sequence 37, App1
28	51	1.4	18	1 US-09-371-347A-27	Sequence 27, App1
29	49	1.4	18	1 US-09-371-347A-33	Sequence 33, App1
30	42	1.2	18	1 US-09-371-347A-31	Sequence 31, App1
31	40	1.1	18	1 US-09-371-347A-39	Sequence 39, App1
32	34	0.9	19	1 US-09-371-347A-39	Sequence 39, App1
33	31	0.9	18	1 US-09-371-347A-40	Sequence 40, App1

ALIGNMENTS

34	29	0.8	6	1	US-09-371-347A-59	Sequence 59, App1
RESULT 1						
US-09-371-347A-2						
Sequence 2, Application US/09371347A						
GENERAL INFORMATION:						
APPLICANT: Gravel, Roy A,						
APPLICANT: Rozen, Rima						
APPLICANT: Leclerc, Daniel						
APPLICANT: Wilson, Aaron						
APPLICANT: Rosenblatt, David						
TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE.						
TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE						
FILE REFERENCE: 50004/003003						
CURRENT APPLICATION NUMBER: US/09/371.347A						
CURRENT FILING DATE: 1999-08-10						
PRIOR APPLICATION NUMBER: 09/232,028						
PRIOR FILING DATE: 1999-01-15						
PRIOR APPLICATION NUMBER: 60/071,622						
PRIOR FILING DATE: 1998-01-16						
NUMBER OF SEQ ID NOS: 61						
SOFTWARE: FastSeq for Windows Version 4.0						
SEQ ID NO 2						
LENGTH: 698						
TYPE: PRT						
ORGANISM: Homo sapiens						
US-09-371-347A-2						
Query Match						
Best Local Similarity 100.0%; Score 3624; DB 1; Length 698;						
Matches 698; Conservative 0; Mismatches 0; Indels 0; Gaps 0;						

QY	1	MRRFLLYATQGGAKAIAEEMCEQAVVHGFSAHLHCISESDKYDLKTEAPLVVVSST	60
DB	1	MRRFLLYATQGGAKAIAEEMCEQAVVHGFSAHLHCISESDKYDLKTEAPLVVVSST	60
QY	61	GTGDPPTARKFVEIEIONQTLPVDFFAHLYRGLGLDSEYTYFCNGKKI1DKLQELGA	120
DB	61	GTGDPPTARKFVEIEIONQTLPVDFFAHLYRGLGLDSEYTYFCNGKKI1DKLQELGA	120
QY	121	RHFYDTGHADDVGLIEVVEPWINGLMPALRKHRRSSRGCEISGALPVASPAIRLTDLV	180
DB	121	RHFYDTGHADDVGLIEVVEPWINGLMPALRKHRRSSRGCEISGALPVASPAIRLTDLV	180
QY	181	KSELHTESQVELRFPDSDGRKQSEVLKONAVNSQNSVTEDESSLTRVPLSQASL	240
DB	181	KSELHTESQVELRFPDSDGRKQSEVLKONAVNSQNSVTEDESSLTRVPLSQASL	240
QY	241	NIPLPEVYLQVHLQESLQGESQVSVTSADPVPQVPISSKAVQLTTNDAIKTTLLVBLDI	300
DB	241	NIPLPEVYLQVHLQESLQGESQVSVTSADPVPQVPISSKAVQLTTNDAIKTTLLVBLDI	300
QY	301	SNTDFSYQPDGAFSVICPNSDSEVQSILQRLQLEDKKEHCYLLKIKADTKKKGATLPQHI	360
DB	301	SNTDFSYQPDGAFSVICPNSDSEVQSILQRLQLEDKKEHCYLLKIKADTKKKGATLPQHI	360
QY	361	PAGSLQIFTFWCEIFRIPKAFRLALVNTSPSARKEPQOEICSGQADYSRFPVADA	420
DB	361	PAGSLQIFTFWCEIFRIPKAFRLALVNTSPSARKEPQOEICSGQADYSRFPVADA	420
QY	421	CACLLDILLAFPSQOPPLSLLEHLPKLOPRPYSCASSLPHPKLHFVNIIVEFLSTAT	480
DB	421	CACLLDILLAFPSQOPPLSLLEHLPKLOPRPYSCASSLPHPKLHFVNIIVEFLSTAT	480
QY	481	TEVLRKGVCTGWLALVAVSVLQPNITASHEDSGKALPKTISISRTTNSFHLPPDPSP1PI	540
DB	481	TEVLRKGVCTGWLALVAVSVLQPNITASHEDSGKALPKTISISRTTNSFHLPPDPSP1PI	540

```

QY 541 IMVPGTGIAPIGFLQHRKLEOHPDGNFGAMWLFFGCRHKDRDYLFRKELRHLFKHG 600
DB 541 IMVPGTGIAPIGFLQHRKLEOHPDGNFGAMWLFFGCRHKDRDYLFRKELRHLFKHG 600
QY 601 ILTHLKVSFSRDAVPGEEBAPAKYVQDNILQHGQVARIILJENGHIYVCGDAKNMAKV 660
DB 601 ILTHLKVSFSRDAVPGEEBAPAKYVQDNILQHGQVARIILJENGHIYVCGDAKNMAKV 660
QY 661 HDALVQIISKEVGEKLEAMKTLATLKEEKRYLQDIWS 698
DB 661 HDALVQIISKEVGEKLEAMKTLATLKEEKRYLQDIWS 698

```

RESULT 2

```

US-09-371-347A-21
; Sequence 21, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A.
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosendiat, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; TITLE OF INVENTION: DEFECTS, CARDIOVASCULAR DISEASE, AND CANCER
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371.347A
; CURRENT FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FASTSEQ for Windows Version 4.0
; SEQ ID NO 21
; LENGTH: 698
; TYPE: PRT
; ORGANISM: Homo sapiens
US-09-371-347A-21

```

```

Query Match 100.0%; Score 3624; DB 1; Length 698;
Best Local Similarity 100.0%; Pred. No. 3e-11;
Matches 698; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

QY 1 MRRFLLIYAQOQAKAIAEMCEQAVVHGFSAADHICISSDKYDKTETAPLVVVSTT 60
DB 1 MRRFLLIYAQOQAKAIAEMCEQAVVHGFSAADHICISSDKYDKTETAPLVVVSTT 60
QY 61 GTGDDPPTARKFYKEIQNTLPVDFFAHLRYGLGLGDSYTYFCNGGKIIDKRLQELGA 120
DB 61 GTGDDPPTARKFYKEIQNTLPVDFFAHLRYGLGLGDSYTYFCNGGKIIDKRLQELGA 120
QY 121 RHFYDTGHADDCVGLIEVPEWPIAGLMPALRKHFRSRGQEBISGALPVASPLRTDLV 180
DB 121 RHFYDTGHADDCVGLIEVPEWPIAGLMPALRKHFRSRGQEBISGALPVASPLRTDLV 180
QY 121 RHFYDTGHADDCVGLIEVPEWPIAGLMPALRKHFRSRGQEBISGALPVASPLRTDLV 180
DB 121 RHFYDTGHADDCVGLIEVPEWPIAGLMPALRKHFRSRGQEBISGALPVASPLRTDLV 180
QY 181 KSELTHIESQVELLRFPDSGRKQSEVLKQNAVNSQSNVITIEPESLTSVPLSQASL 240
DB 181 KSELTHIESQVELLRFPDSGRKQSEVLKQNAVNSQSNVITIEPESLTSVPLSQASL 240
QY 181 KSELTHIESQVELLRFPDSGRKQSEVLKQNAVNSQSNVITIEPESLTSVPLSQASL 240
DB 181 KSELTHIESQVELLRFPDSGRKQSEVLKQNAVNSQSNVITIEPESLTSVPLSQASL 240
QY 241 NIPGLPEYVQVHLQESLQGESQSVTSADPVFOVPIKAVOLTTMDAKITLLVBLDI 300
DB 241 NIPGLPEYVQVHLQESLQGESQSVTSADPVFOVPIKAVOLTTMDAKITLLVBLDI 300
QY 301 SNTDFSYQPGDAPSVICPNSDSEVOSLQRLQLEDKREHCYLLKIKADTYKKGATLPQHI 360
DB 301 SNTDFSYQPGDAPSVICPNSDSEVOSLQRLQLEDKREHCYLLKIKADTYKKGATLPQHI 360
QY 361 PACGCSLOFITWKLCTEIRAIPKAFALRVYVTSASAKRRLQELCSQAGADYSRFRDA 420
DB 361 PACGCSLOFITWKLCTEIRAIPKAFALRVYVTSASAKRRLQELCSQAGADYSRFRDA 420
QY 421 CACILDLILAFSCQPLSLILLEHLPLQRPYSCASSLFHPGKLHFVNIVEFLSTAT 480

```

```

DB 421 CACILDLILAFSCQPLSLILLEHLPLQRPYSCASSLFHPGKLHFVNIVEFLSTAT 480
QY 481 TEVLRKVCCTGMIALLVASTLOPNITASHEDSGKALAPKISIPRTNSPHLPDDPSIPT 540
DB 481 TEVLRKVCCTGMIALLVASTLOPNITASHEDSGKALAPKISIPRTNSPHLPDDPSIPT 540
QY 541 IMVPGTGIAPIGFLQHRKLEOHPDGNFGAMWLFFGCRHKDRDYLFRKELRHLFKHG 600
DB 541 IMVPGTGIAPIGFLQHRKLEOHPDGNFGAMWLFFGCRHKDRDYLFRKELRHLFKHG 600
QY 601 ILTHLKVSFSRDAVPGEEBAPAKYVQDNILQHGQVARIILJENGHIYVCGDAKNMAKV 660
DB 601 ILTHLKVSFSRDAVPGEEBAPAKYVQDNILQHGQVARIILJENGHIYVCGDAKNMAKV 660
QY 661 HDALVQIISKEVGEKLEAMKTLATLKEEKRYLQDIWS 698
DB 661 HDALVQIISKEVGEKLEAMKTLATLKEEKRYLQDIWS 698

```

RESULT 3

```

US-09-371-347A-42
; Sequence 42, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A.
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosendiat, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; TITLE OF INVENTION: DEFECTS, CARDIOVASCULAR DISEASE, AND CANCER
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371.347A
; CURRENT FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FASTSEQ for Windows Version 4.0
; SEQ ID NO 42
; LENGTH: 698
; TYPE: PRT
; ORGANISM: Homo sapiens
US-09-371-347A-42

```

```

Query Match 99.9%; Score 3620; DB 1; Length 698;
Best Local Similarity 99.9%; Pred. No. 3.1e-11;
Matches 697; Conservative 1; Mismatches 0; Indels 0; Gaps 0;

QY 1 MRRFLLIYAQOQAKAIAEMCEQAVVHGFSAADHICISSDKYDKTETAPLVVVSTT 60
DB 1 MRRFLLIYAQOQAKAIAEMCEQAVVHGFSAADHICISSDKYDKTETAPLVVVSTT 60
QY 61 GTGDDPPTARKFYKEIQNTLPVDFFAHLRYGLGLGDSYTYFCNGGKIIDKRLQELGA 120
DB 61 GTGDDPPTARKFYKEIQNTLPVDFFAHLRYGLGLGDSYTYFCNGGKIIDKRLQELGA 120
QY 121 RHFYDTGHADDCVGLIEVPEWPIAGLMPALRKHFRSRGQEBISGALPVASPLRTDLV 180
DB 121 RHFYDTGHADDCVGLIEVPEWPIAGLMPALRKHFRSRGQEBISGALPVASPLRTDLV 180
QY 121 RHFYDTGHADDCVGLIEVPEWPIAGLMPALRKHFRSRGQEBISGALPVASPLRTDLV 180
DB 121 RHFYDTGHADDCVGLIEVPEWPIAGLMPALRKHFRSRGQEBISGALPVASPLRTDLV 180
QY 181 KSELTHIESQVELLRFPDSGRKQSEVLKQNAVNSQSNVITIEPESLTSVPLSQASL 240
DB 181 KSELTHIESQVELLRFPDSGRKQSEVLKQNAVNSQSNVITIEPESLTSVPLSQASL 240
QY 181 KSELTHIESQVELLRFPDSGRKQSEVLKQNAVNSQSNVITIEPESLTSVPLSQASL 240
DB 181 KSELTHIESQVELLRFPDSGRKQSEVLKQNAVNSQSNVITIEPESLTSVPLSQASL 240
QY 241 NIPGLPEYVQVHLQESLQGESQSVTSADPVFOVPIKAVOLTTMDAKITLLVBLDI 300
DB 241 NIPGLPEYVQVHLQESLQGESQSVTSADPVFOVPIKAVOLTTMDAKITLLVBLDI 300
QY 301 SNTDFSYQPGDAPSVICPNSDSEVOSLQRLQLEDKREHCYLLKIKADTYKKGATLPQHI 360

```



```
Db 301 SNTDFSYQGDFAFSYICNSDSEVOSLLQRLQLEDKREHCYVLKTKADTKKKGATLPHI 360
Qy 361 PAGSLQPIFTWCLEIRAIIPKAFRALVDYTSDAEKRRLOELCSKOGADYSRFVDA 420
Db 361 PAGSLQPIFTWCLEIRAIIPKAFRALVDYTSDAEKRRLOELCSKOGADYSRFVDA 420
Qy 421 CACLLDLLAFSPSCOPPLSLLEHLPKLQPRPYSCASSSLFHPGKLHFVNIIVEFLSTAT 480
Db 421 CACLLDLLAFSPSCOPPLSLLEHLPKLQPRPYSCASSSLFHPGKLHFVNIIVEFLSTAT 480
Qy 481 TEVLRKGVCTGMLALVAVSVLQPNHASHEDSGKALAPKISISPTTNSFHLRDDPSIPI 540
Db 481 TEVLRKGVCTGMLALVAVSVLQPNHASHEDSGKALAPKISISPTTNSFHLRDDPSIPI 540
Qy 541 IMVGPGTGIAPFIFGLQREKLOEQHPDNGAMWLFPGCRHKRDYLFREKLRHFLKHG 600
Db 541 IMVGPGTGIAPFIFGLQREKLOEQHPDNGAMWLFPGCRHKRDYLFREKLRHFLKHG 600
Qy 601 ILTHLKVSFSRDAFVGESEAPAKYVDNIQLHGQOVARILQENGIYVCGDAKMAKDV 660
Db 601 ILTHLKVSFSRDAFVGESEAPAKYVDNIQLHGQOVARILQENGIYVCGDAKMAKDV 660
Qy 661 HDALVQIISKEVGEKLEAMKTTLATLKEEKRYLDIWS 698
Db 661 HDALVQIISKEVGEKLEAMKTTLATLKEEKRYLDIWS 698
```

RESULT 4

```
US-09-371-347A-44
; Sequence 44, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A,
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN MENTIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; TITLE OF INVENTION: DEFECTS, CARDIOVASCULAR DISEASE, AND CANCER
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371.347A
; CURRENT FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 44
; LENGTH: 698
; TYPE: PRT
; ORGANISM: Homo sapiens
US-09-371-347A-44
```

Query Match 99.7%; Score 3614; DB 1; Length 698;
Best Local Similarity 99.9%; Pred. No.3.2e-11;
Matches 697; Conservative 0; Mismatches 1; Indels 0; Gaps 0;

```
Qy 1 MRRFLLYATQOGAKAIAEMCEQAVVHGFSADLHCISESDKYDLKTEAPLVVVVSTT 60
Db 1 MRRFLLYATQOGAKAIAEMCEQAVVHGFSADLHCISESDKYDLKTEAPLVVVVSTT 60
Qy 61 GTGPPPTARKFVKEIONQTLPVDFPAHLRYGLGLGDSSETTYCNGSKIIDKRLQELGA 120
Db 61 GTGPPPTARKFVKEIONQTLPVDFPAHLRYGLGLGDSSETTYCNGSKIIDKRLQELGA 120
Qy 121 RHFYDTGHAADCVGLELVVEPMIAGLWPAKLRKHFFSSRGQEEISGALPVASPASLRDLY 180
Db 121 RHFYDTGHAADCVGLELVVEPMIAGLWPAKLRKHFFSSRGQEEISGALPVASPASLRDLY 180
Qy 181 KSELHIESQVEELLRFDDSGKSDSEVLKONAVNSQSNVVIIEFSSSLTRSVPLSQASL 240
Db 181 KSELHIESQVEELLRFDDSGKSDSEVLKONAVNSQSNVVIIEFSSSLTRSVPLSQASL 240
```

```
Qy 241 NIPGLPEYLOVHLOESIGQESQVTSADPVFQPISKAVOLTNDAIKTTLLVEIDI 300
Db 241 NIPGLPEYLOVHLOESIGQESQVTSADPVFQPISKAVOLTNDAIKTTLLVEIDI 300
Qy 301 SNTDFSYQGDFAFSYICNSDSEVOSLLQRLQLEDKREHCYVLKTKADTKKKGATLPHI 360
Db 301 SNTDFSYQGDFAFSYICNSDSEVOSLLQRLQLEDKREHCYVLKTKADTKKKGATLPHI 360
Qy 361 PAGSLQPIFTWCLEIRAIIPKAFRALVDYTSDAEKRRLOELCSKOGADYSRFVDA 420
Db 361 PAGSLQPIFTWCLEIRAIIPKAFRALVDYTSDAEKRRLOELCSKOGADYSRFVDA 420
Qy 421 CACLLDLLAFSPSCOPPLSLLEHLPKLQPRPYSCASSSLFHPGKLHFVNIIVEFLSTAT 480
Db 421 CACLLDLLAFSPSCOPPLSLLEHLPKLQPRPYSCASSSLFHPGKLHFVNIIVEFLSTAT 480
Qy 481 TEVLRKGVCTGMLALVAVSVLQPNHASHEDSGKALAPKISISPTTNSFHLRDDPSIPI 540
Db 481 TEVLRKGVCTGMLALVAVSVLQPNHASHEDSGKALAPKISISPTTNSFHLRDDPSIPI 540
Qy 541 IMVGPGTGIAPFIFGLQREKLOEQHPDNGAMWLFPGCRHKRDYLFREKLRHFLKHG 600
Db 541 IMVGPGTGIAPFIFGLQREKLOEQHPDNGAMWLFPGCRHKRDYLFREKLRHFLKHG 600
Qy 601 ILTHLKVSFSRDAFVGESEAPAKYVDNIQLHGQOVARILQENGIYVCGDAKMAKDV 660
Db 601 ILTHLKVSFSRDAFVGESEAPAKYVDNIQLHGQOVARILQENGIYVCGDAKMAKDV 660
Qy 661 HDALVQIISKEVGEKLEAMKTTLATLKEEKRYLDIWS 698
Db 661 HDALVQIISKEVGEKLEAMKTTLATLKEEKRYLDIWS 698
```

RESULT 5

```
US-09-371-347A-46
; Sequence 46, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A,
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN MENTIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; TITLE OF INVENTION: DEFECTS, CARDIOVASCULAR DISEASE, AND CANCER
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371.347A
; CURRENT FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 46
; LENGTH: 697
; TYPE: PRT
; ORGANISM: Homo sapiens
US-09-371-347A-46
```

Query Match 99.6%; Score 3609.5; DB 1; Length 697;
Best Local Similarity 99.9%; Pred. No.3.3e-11;
Matches 697; Conservative 0; Mismatches 0; Indels 1; Gaps 1;

```
Qy 1 MRRFLLYATQOGAKAIAEMCEQAVVHGFSADLHCISESDKYDLKTEAPLVVVVSTT 60
Db 1 MRRFLLYATQOGAKAIAEMCEQAVVHGFSADLHCISESDKYDLKTEAPLVVVVSTT 60
Qy 61 GTGPPPTARKFVKEIONQTLPVDFPAHLRYGLGLGDSSETTYCNGSKIIDKRLQELGA 120
Db 61 GTGPPPTARKFVKEIONQTLPVDFPAHLRYGLGLGDSSETTYCNGSKIIDKRLQELGA 120
```

```

QY 121 RHFYDTGHADDCVGLSELVEPFWIMAGLWPAALRKHRRSSRGGEISGALPVASPASLRDTLV 180
Db 121 RHFYDTGHADDCVGLSELVEPFWIMAGLWPAALRKHRRSSRGGEISGALPVASPASLRDTLV 180
QY 181 KSELHIESQVELLRFPDSSGRKSEVLRKQAVNSQSNVTEDESSLTSSVPLSQASL 240
Db 181 KSELHIESQVELLRFPDSSGRKSEVLRKQAVNSQSNVTEDESSLTSSVPLSQASL 240
QY 241 NIPGLPEYLVQVHIOESIGQESQSVTSADPVQVPIKRAVOLTTNDALKTTLVLELDI 300
Db 241 NIPGLPEYLVQVHIOESIGQESQSVTSADPVQVPIKRAVOLTTNDALKTTLVLELDI 300
QY 301 SNTDFSYQPGDAFVIPCNSDSEVQSLLQRLQLEDKRHCYLLKIKADTKKKGATLPPQHI 360
Db 301 SNTDFSYQPGDAFVIPCNSDSEVQSLLQRLQLEDKRHCYLLKIKADTKKKGATLPPQHI 360
QY 361 PAGSLQFIPTWCLEIRAIIPKKAFLRALVDYTSASAEKRLQELCSQGAADYSRFRDPA 420
Db 361 PAGSLQFIPTWCLEIRAIIPKKAFLRALVDYTSASAEKRLQELCSQGAADYSRFRDPA 420
QY 421 CACLLDLILAFSPGCPPLSTLLEHLPKLQRPYSCASSLPHPGKLFHVENIVEFLSTAT 480
Db 421 CACLLDLILAFSPGCPPLSTLLEHLPKLQRPYSCASSLPHPGKLFHVENIVEFLSTAT 480
QY 481 TEVLARKGVCTGWLALLVASVLQPNIHASHEDSGKALPKTISISPTTNSFHLPPDPSIPI 540
Db 481 TEVLARKGVCTGWLALLVASVLQPNIHASHEDSGKALPKTISISPTTNSFHLPPDPSIPI 540
QY 541 IMVPGGCIAPFIQFLQHRQELQOHDPDGNFGAMWLPFGCRHKRDYLPFKELRHFLLKRG 600
Db 541 IMVPGGCIAPFIQFLQHRQELQOHDPDGNFGAMWLPFGCRHKRDYLPFKELRHFLLKRG 600
QY 601 ILTHTKSFSDADVGESEAPAKYVDNIOLHGOVARIILQENGHIYVCGADAKNMAKV 660
Db 601 ILTHTKSFSDADVGESEAPAKYVDNIOLHGOVARIILQENGHIYVCGADAKNMAKV 660
QY 660 HDALVQIISKEVGVEKLEAMKTALTLEKERYLODINS 698
Db 660 HDALVQIISKEVGVEKLEAMKTALTLEKERYLODINS 698

```

```

RESULT 6
US-09-371-347A-48
; Sequence 48, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravey, Roy A.
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371, 347A
; CURRENT FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232, 028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071, 622
; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 48
; LENGTH: 689
; TYPE: PRT
; ORGANISM: Homo sapiens
US-09-371-347A-48

```

```

Query Match 79.6%; Score 2883; DB 1; Length 689;
Best Local Similarity 100.0%; Pred. No. 1; le-08;
Matches 558; Conservative 0; Mismatches 0; Indels 0; Gaps 0;
QY 2 RRFLLVATQGOAKALAEEMCEQAVVHGFSDADHICISSEKDYDLKTETAPLVVVVSTTG 61

```

```

Db 1 RRFLLVATQGOAKALAEEMCEQAVVHGFSDADHICISSEKDYDLKTETAPLVVVVSTTG 60
QY 62 TGPDPDARKEVFEIONQTLVUDFPAHLRYGLIGDSEYTYCNGSKIIDKLOEIGAR 121
Db 62 TGPDPDARKEVFEIONQTLVUDFPAHLRYGLIGDSEYTYCNGSKIIDKLOEIGAR 120
QY 122 HFYDTGHADDCVGLSELVEPFWIMAGLWPAALRKHRRSSRGGEISGALPVASPASLRDTLV 181
Db 122 HFYDTGHADDCVGLSELVEPFWIMAGLWPAALRKHRRSSRGGEISGALPVASPASLRDTLV 180
QY 181 SELHIESQVELLRFPDSSGRKSEVLRKQAVNSQSNVTEDESSLTSSVPLSQASLN 240
Db 181 SELHIESQVELLRFPDSSGRKSEVLRKQAVNSQSNVTEDESSLTSSVPLSQASLN 240
QY 242 IPGLPPEYLVQVHIOESIGQESQSVTSADPVQVPIKRAVOLTTNDALKTTLVLELDIS 301
Db 242 IPGLPPEYLVQVHIOESIGQESQSVTSADPVQVPIKRAVOLTTNDALKTTLVLELDIS 300
QY 302 NTFPSYQPGDAFVIPCNSDSEVQSLLQRLQLEDKRHCYLLKIKADTKKKGATLPPQHI 361
Db 302 NTFPSYQPGDAFVIPCNSDSEVQSLLQRLQLEDKRHCYLLKIKADTKKKGATLPPQHI 360
QY 362 AGCSLQFIPTWCLEIRAIIPKKAFLRALVDYTSASAEKRLQELCSQGAADYSRFRDPA 421
Db 362 AGCSLQFIPTWCLEIRAIIPKKAFLRALVDYTSASAEKRLQELCSQGAADYSRFRDPA 420
QY 422 ACCLDLILAFSPGCPPLSTLLEHLPKLQRPYSCASSLPHPGKLFHVENIVEFLSTAT 481
Db 422 ACCLDLILAFSPGCPPLSTLLEHLPKLQRPYSCASSLPHPGKLFHVENIVEFLSTAT 480
QY 482 EVLRKGVCTGWLALLVASVLQPNIHASHEDSGKALPKTISISPTTNSFHLPPDPSIPI 541
Db 482 EVLRKGVCTGWLALLVASVLQPNIHASHEDSGKALPKTISISPTTNSFHLPPDPSIPI 540
QY 542 MVPGGCIAPFIQFLQHR 559
Db 542 MVPGGCIAPFIQFLQHR 558

```

```

RESULT 7
US-09-371-347A-22
; Sequence 22, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravey, Roy A.
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371, 347A
; CURRENT FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232, 028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071, 622
; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 22
; LENGTH: 682
; TYPE: PRT
; ORGANISM: Caenorhabditis elegans
US-09-371-347A-22

```

```

Query Match 25.2%; Score 914; DB 1; Length 682;
Best Local Similarity 32.1%; Pred. No. 0.073;
Matches 236; Conservative 119; Mismatches 288; Indels 92; Gaps 15;
QY 1 MRFLLVATQGOAKALAEEMCEQAVVHGFSDADHICISSEKDYDLKTETAPLVVVVSTTG 60

```

```
Db 1 MTDELIAGSQTGAETIAKSLKEKALIGLTPRLHALDENKKNLEKLCALIVAST 60
Qy 61 GTGDPPTARKFVEKEIONQTLVPDFALHRYGLIGDSEYTYPCNGKTIIDKLOEIGA 120
Db 61 GGGAPDCAFCFVRINNSLENEYLKNLDYLLGLGSGNSSTYOTIPRKIDKQULTALGA 120
Qy 121 RHFYDTGHADDCVGLVEVEPMIAGLWPAIRKHFSSRGQEEISGALPVASPARLTDLV 180
Db 121 NRLDRAEADQVGLLEVEPMIEKFATLASRFDISADKN-----AITSSNKLNQV 175
Qy 181 KSE---LHIESQVELLRFDDSGR-----KDEVLKONAVNSQSNVYI 221
Db 176 KTEEEKKALLQETIEEDSDDEGRGVIGIMLIPENHYDEPEISLKSSQTLSDNENI- 233
Qy 222 EDFESSILTRSP-----PLSQSLNIPGLP-----EYLQVHIOESLGQESQVSTSDAPV 273
Db 234 -----RVLIAPQPIVSSVSNRKLPEDTKLEWQNLCKMPGVVYKPFVFLVVASAEV 284
Qy 274 FOVPIKAVQULTTDAIKTTLVELDISN--TDFSYPQDAFAFVIPCNSDEVOISLQRL 331
Db 285 TD-PFSK-----KIKTKMITVDPCGDHAAELQYEGDAIYCVPRPALEVNFILKRC 335
Qy 332 QLEDKREHCVLLKIKADTKKKGATLPQHI PACGSLQFIETWCLEIRALPKKAFRLAVDY 391
Db 336 GVLIDAQOQCELSINPKTEKINAQIPGHVHKITTLRHMFCTCLDIRAPGRPLRVLAES 395
Qy 392 TSDSAEKRLQELCKSGAADYSFVRACACLLDLAFSCQPLSLLEHLPKLOPR 451
Db 396 TSDNEKRRLLLECSAQGMKQFTDVPKPGISLADMFAFPNVKRPVDRLLLELRLIPR 455
Qy 452 PYSCASSLFFHGHKHEFVIEFLSTATTEVLRKGVCTGMALLVASVLQPNIHASHED 511
Db 456 PYSSSS---YNNRKARLLYSEMERPAIDGRHSRKGATIDWLSI----- 497
Qy 512 SGKALAKISISPTTNSFHLP-----DDPSIPIIIVGSGTGIAPFGLQREKLOE 564
Db 498 ---RIGCKVQVIGKEPARFLPLGMTKNSAGKPLMLVWGSGTGVSEFLHFLRKLO 554
Qy 565 QHPDGNCA-MWLFPGCRHORDYLFREKELHFLKGLITLHKXSFSDAVGGEBAK 623
Db 555 DSPEDFVDVPRVLFPGCRDSSVDALYMELEMFVSEGLT-----DLIICESSEORGE 606
Qy 624 YVODNIOHGGQVARI-LQENGHIYVCGDAKNNADVDHALVOIISKEVGEKLEAMKT 682
Db 607 RVQDGLAKYDKVLPFLASTESKIFICGDAKMSKDVWQCFSDIVASDQIPDLKAKK 666
Qy 683 LATLKEEKRYLQDIW 697
Db 667 LMDLKSDQYIEDVW 681

RESULT 8
US-09-371-347A-23
; Sequence 23, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A.
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371.347A
; PRIOR FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 23
```

```
; LENGTH: 677
; TYPE: PRT
; ORGANISM: Homo sapiens
US-09-371-347A-23

Query Match      20.2%, Score 731.5; DB 1; Length 677;
Best Local Similarity 29.3%, Pred. No. 0.31;
Matches 209; Conservative 122; Mismatches 252; Indels 131; Gaps 21;

Qy 2 RRFLLIATQOGAKAIAEMCEQA---VHGFSADLHCISESDKYDL-----KTEIA 51
Db 78 RNIIVFGSQGTAEERANRLSKDAHRYGKMGMSAD-----PREYDLADLSSLPEDINA 131
Qy 52 PLVVVSTGTGDDPPTARKFVEKEIONQTLVPDFALHRYGLIGDSEYTYPCNGKTI 111
Db 132 LVVFCMAHYGEGDPTDIAQDFYDMLQETDVL---SGVKAIVFGILKNTTTHFNAWKYV 188
Qy 112 DKRLQELGARHFYDTGHADDCVGLVEVEPMIAGLWPAIRKHFSSRGQEEISGALPVAS 171
Db 189 DKRLQELGAGRIFFELGIGDDGNGLEEDPITRREQFWPACVGHF-----GVEATGE 238
Qy 172 PASLRTDLVSELHIESQVELLRFDDSGRKDSEVLKONAVNSQSNVYIEDFESSILTRS 231
Db 239 ESSIR-----QVEL-----VHTDIDAA----- 256
Qy 232 VPIPSQSLNIPGLPREYLOVHIOESLGQESQVSTSDAPVQVPIKAVQULTTNDAL- 290
Db 257 -----KVTMGE-MGRKL---SYENQKPPPAKQPFLLAATVTRKLN 293
Qy 291 ---KTLVELDISNTDPSYQPDARFVIPCNSDEVOISLQRLQLEDKREHCVLLKIK 346
Db 294 QGTRHMLHLELIDSDSKIRESGDHVAVY-PANDSALVNGKILGADLDVMSINLND 352
Qy 347 ADTKKAGATLPQHI PACGSLQFIETWCLEIRALPKKAFRLAVDYTSDSAEKRLQELCS 406
Db 353 EESNKK-----HPPCPTSYRTALTYYLIDITNPPRTNVLVELAQYASEPSECELRKVAS 407
Qy 407 KQGAAD---YSRFVADACACLLDLAFPSQCPRLSLLEHLPKLOPRPYSCASSLFFHG 464
Db 408 SSGGKELVSSVVEARHILALIDQCSLPRIDHLCFLRLQARYSJASSKYPHN 467
Qy 465 KLHFFVIEFLSTATTEVLRKGVCTGMALLVASVLQPNIHASHEDSGKALAKISISP 524
Db 468 SVHICAVVEIETAGR--INKGVAITNL-----RAKEP-----VGENGRALVEMFV--- 513
Qy 525 RTTNSFHLPPDPSIPIIIVGSGTGIAPFGLQREKLOEHPDGNFGAMLPFGCRHND 584
Db 514 -RKSQFLRPFKATPPIVWGSGTGVAPFIFGIERAMLRQCKE--VGETLLYYGCRSD 570
Qy 585 RDVLFREKELHFLKGLITLHKXSFSDAPVGEBAKXYVODNIOHGGQVARILOEN 644
Db 571 EDVLYREELAQFHNDGALTQLNVAFSR-----EQRKVVYOHLLKODREHLM-LIEGG 623
Qy 645 GHIYVCGDAKNNADVDHALVOIISKEVGEKLEAMKTLLTKKEKRYLQDIWS 698
Db 624 AHIYVCGDANMADVDQNTFYDIAELGAMENHQAVDYIKLTKKGYSLDWS 677

RESULT 9
US-09-371-347A-60
; Sequence 60, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A.
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371.347A
; PRIOR FILING DATE: 1999-08-10
```

```

; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 60
; LENGTH: 41
; TYPE: PRT
; ORGANISM: Homo sapiens
US-09-371-347A-60

```

```

Query Match          5.9%; Score 215; DB 1; Length 41;
Best Local Similarity 100.0%; Pred. No. 14;
Matches 41; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

```

```

QY      620 APAKYVDNIQLHGQVARIILQENHIIYVCGAKNAKDV 660
DB      1 APAKYVDNIQLHGQVARIILQENHIIYVCGAKNAKDV 41

```

```

RESULT 10
US-09-371-347A-54
; Sequence 54, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A.
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; CURRENT FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 54
; LENGTH: 29
; TYPE: PRT
; ORGANISM: Homo sapiens
US-09-371-347A-54

```

```

Query Match          4.4%; Score 158; DB 1; Length 29;
Best Local Similarity 100.0%; Pred. No. 18;
Matches 29; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

```

```

QY      87 AHRVGLIGDSEYTFPCNGKIIDKRL 115
DB      1 AHRVGLIGDSEYTFPCNGKIIDKRL 29

```

```

RESULT 11
US-09-371-347A-58
; Sequence 58, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A.
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; CURRENT FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028

```

```

; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 58
; LENGTH: 22
; TYPE: PRT
; ORGANISM: Homo sapiens
US-09-371-347A-58

```

```

Query Match          3.2%; Score 117; DB 1; Length 22;
Best Local Similarity 100.0%; Pred. No. 21;
Matches 22; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

```

```

QY      538 IPIIMVPGTGIAIPFIFGLQHR 559
DB      1 IPIIMVPGTGIAIPFIFGLQHR 22

```

```

RESULT 12
US-09-371-347A-53
; Sequence 53, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A.
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; CURRENT FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 53
; LENGTH: 23
; TYPE: PRT
; ORGANISM: Homo sapiens
US-09-371-347A-53

```

```

Query Match          3.2%; Score 116; DB 1; Length 23;
Best Local Similarity 100.0%; Pred. No. 21;
Matches 23; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

```

```

QY      54 VVVSTTGCDPPDTARKPKVKEL 76
DB      1 VVVSTTGCDPPDTARKPKVKEL 23

```

```

RESULT 13
US-09-371-347A-25
; Sequence 25, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A.
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; CURRENT FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028

```

```
;; PRIOR APPLICATION NUMBER: 60/071,622
;; PRIOR FILING DATE: 1998-01-16
;; NUMBER OF SEQ ID NOS: 61
;; SOFTWARE: FastSeq for Windows Version 4.0
;; SEQ ID NO 25
;; LENGTH: 18
;; TYPE: PRT
;; ORGANISM: Homo sapiens
US-09-371-347A-25
```

```
Query Match          3.0%; Score 109; DB 1; Length 18;
Best Local Similarity 100.0%; Pred. No. 21;
Matches 18; Conservative 0; Mismatches 0; Indels 0; Gaps 0;
```

```
QY      572 GAMWLFPGCHRKDRDYLF 589
Db      1 GAMWLFPGCHRKDRDYLF 18
```

```
RESULT 14
US-09-371-347A-55
;; Sequence 55, Application US/09371347A
;; GENERAL INFORMATION:
;; APPLICANT: Gravel, Roy A.
;; APPLICANT: Rozen, Rima
;; APPLICANT: Leclerc, Daniel
;; APPLICANT: Wilson, Aaron
;; APPLICANT: Rosenblatt, David
;; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
;; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
;; TITLE OF INVENTION: DEFECTS, CARDIOVASCULAR DISEASE, AND CANCER
;; FILE REFERENCE: 50004/003003
;; CURRENT APPLICATION NUMBER: US/09/371,347A
;; CURRENT FILING DATE: 1999-08-10
;; PRIOR APPLICATION NUMBER: 09/232,028
;; PRIOR FILING DATE: 1999-01-15
;; PRIOR APPLICATION NUMBER: 60/071,622
;; PRIOR FILING DATE: 1998-01-16
;; NUMBER OF SEQ ID NOS: 61
;; SOFTWARE: FastSeq for Windows Version 4.0
;; SEQ ID NO 55
;; LENGTH: 19
;; TYPE: PRT
;; ORGANISM: Homo sapiens
US-09-371-347A-55
```

```
Query Match          2.9%; Score 104; DB 1; Length 19;
Best Local Similarity 100.0%; Pred. No. 22;
Matches 19; Conservative 0; Mismatches 0; Indels 0; Gaps 0;
```

```
QY      448 LQRPPIYSCASSLPHPGKL 466
Db      1 LQRPPIYSCASSLPHPGKL 19
```

```
RESULT 15
US-09-371-347A-52
;; Sequence 52, Application US/09371347A
;; GENERAL INFORMATION:
;; APPLICANT: Gravel, Roy A.
;; APPLICANT: Rozen, Rima
;; APPLICANT: Leclerc, Daniel
;; APPLICANT: Wilson, Aaron
;; APPLICANT: Rosenblatt, David
;; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
;; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
;; TITLE OF INVENTION: DEFECTS, CARDIOVASCULAR DISEASE, AND CANCER
;; FILE REFERENCE: 50004/003003
;; CURRENT APPLICATION NUMBER: US/09/371,347A
;; CURRENT FILING DATE: 1999-08-10
;; PRIOR APPLICATION NUMBER: 09/232,028
;; PRIOR FILING DATE: 1999-01-15
;; PRIOR APPLICATION NUMBER: 60/071,622
```

```
;; PRIOR FILING DATE: 1998-01-16
;; NUMBER OF SEQ ID NOS: 61
;; SOFTWARE: FastSeq for Windows Version 4.0
;; SEQ ID NO 52
;; LENGTH: 20
;; TYPE: PRT
;; ORGANISM: Homo sapiens
US-09-371-347A-52
```

```
Query Match          2.8%; Score 100; DB 1; Length 20;
Best Local Similarity 100.0%; Pred. No. 22;
Matches 20; Conservative 0; Mismatches 0; Indels 0; Gaps 0;
```

```
QY      4 FLILYATQGGAKAIAEEMC 23
Db      1 FLILYATQGGAKAIAEEMC 20
```

```
RESULT 16
US-09-371-347A-57
;; Sequence 57, Application US/09371347A
;; GENERAL INFORMATION:
;; APPLICANT: Gravel, Roy A.
;; APPLICANT: Rozen, Rima
;; APPLICANT: Leclerc, Daniel
;; APPLICANT: Wilson, Aaron
;; APPLICANT: Rosenblatt, David
;; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
;; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
;; TITLE OF INVENTION: DEFECTS, CARDIOVASCULAR DISEASE, AND CANCER
;; FILE REFERENCE: 50004/003003
;; CURRENT APPLICATION NUMBER: US/09/371,347A
;; CURRENT FILING DATE: 1999-08-10
;; PRIOR APPLICATION NUMBER: 09/232,028
;; PRIOR FILING DATE: 1999-01-15
;; PRIOR APPLICATION NUMBER: 60/071,622
;; PRIOR FILING DATE: 1998-01-16
;; NUMBER OF SEQ ID NOS: 61
;; SOFTWARE: FastSeq for Windows Version 4.0
;; SEQ ID NO 57
;; LENGTH: 17
;; TYPE: PRT
;; ORGANISM: Homo sapiens
US-09-371-347A-57
```

```
Query Match          2.4%; Score 87; DB 1; Length 17;
Best Local Similarity 100.0%; Pred. No. 23;
Matches 17; Conservative 0; Mismatches 0; Indels 0; Gaps 0;
```

```
QY      484 LRKGVCTGMLALIVASY 500
Db      1 LRKGVCTGMLALIVASY 17
```

```
RESULT 17
US-09-371-347A-56
;; Sequence 56, Application US/09371347A
;; GENERAL INFORMATION:
;; APPLICANT: Gravel, Roy A.
;; APPLICANT: Rozen, Rima
;; APPLICANT: Leclerc, Daniel
;; APPLICANT: Wilson, Aaron
;; APPLICANT: Rosenblatt, David
;; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
;; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
;; TITLE OF INVENTION: DEFECTS, CARDIOVASCULAR DISEASE, AND CANCER
;; FILE REFERENCE: 50004/003003
;; CURRENT APPLICATION NUMBER: US/09/371,347A
;; CURRENT FILING DATE: 1999-08-10
;; PRIOR APPLICATION NUMBER: 09/232,028
;; PRIOR FILING DATE: 1999-01-15
;; PRIOR APPLICATION NUMBER: 60/071,622
;; PRIOR FILING DATE: 1998-01-16
```

```
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 56
; LENGTH: 14
; TYPE: PRT
; ORGANISM: Homo sapiens
US-09-371-347A-56
```

```
Query Match      1.9%; Score 68; DB 1; Length 14;
Best Local Similarity 100.0%; Pred. No. 24;
Matches 14; Conservative 0; Mismatches 0; Indels 0; Gaps 0;
```

```
QY      468 FVENIVEFLSTAT 481
Db      1 FVENIVEFLSTAT 14
```

```
RESULT 18
US-09-371-347A-34
; Sequence 34, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A.
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; PRIOR FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 34
; LENGTH: 18
; TYPE: PRT
; ORGANISM: Oryctolagus cuniculus
US-09-371-347A-34
```

```
Query Match      1.7%; Score 61; DB 1; Length 18;
Best Local Similarity 55.6%; Pred. No. 24;
Matches 10; Conservative 3; Mismatches 5; Indels 0; Gaps 0;
```

```
QY      572 GAMWLFFGCRHKRDYLF 589
Db      1 GRMTLVFGCRHPEDHLY 18
```

```
RESULT 19
US-09-371-347A-35
; Sequence 35, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A.
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; PRIOR FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ ID NOS: 61
```

```
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 35
; LENGTH: 18
; TYPE: PRT
; ORGANISM: Gallus gallus
US-09-371-347A-35
```

```
Query Match      1.7%; Score 61; DB 1; Length 18;
Best Local Similarity 55.6%; Pred. No. 24;
Matches 10; Conservative 3; Mismatches 5; Indels 0; Gaps 0;
```

```
QY      572 GAMWLFFGCRHKRDYLF 589
Db      1 GDMILFFGCRHPMDHLY 18
```

```
RESULT 20
US-09-371-347A-26
; Sequence 26, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A.
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; PRIOR FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 26
; LENGTH: 18
; TYPE: PRT
; ORGANISM: Homo sapiens
US-09-371-347A-26
```

```
Query Match      1.6%; Score 58; DB 1; Length 18;
Best Local Similarity 50.0%; Pred. No. 24;
Matches 9; Conservative 3; Mismatches 6; Indels 0; Gaps 0;
```

```
QY      572 GAMWLFFGCRHKRDYLF 589
Db      1 GETLLVYGCRSRDEDYLY 18
```

```
RESULT 21
US-09-371-347A-30
; Sequence 30, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A.
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; PRIOR FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
```

```
; SEQ ID NO 30
; LENGTH: 18
; TYPE: PRT
; ORGANISM: Aspergillus niger
US-09-371-347A-30
```

```
Query Match          1.6%; Score 58; DB 1; Length 18;
Best Local Similarity 55.6%; Pred. No. 24;
Matches 10; Conservative 2; Mismatches 6; Indels 0; Gaps 0;
```

```
QY      572 GAMWLFPGCRHKRDYLF 589
Db      1 GPVLVFGCRKSDDEDFLY 18
```

```
RESULT 22
US-09-371-347A-38
; Sequence 38, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A,
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; TITLE OF INVENTION: DEFECTS, CARDIOVASCULAR DISEASE, AND CANCER
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; CURRENT FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 38
; LENGTH: 18
; TYPE: PRT
; ORGANISM: Thiocapaea roseopersicina
US-09-371-347A-38
```

```
Query Match          1.6%; Score 57; DB 1; Length 18;
Best Local Similarity 55.6%; Pred. No. 24;
Matches 10; Conservative 2; Mismatches 6; Indels 0; Gaps 0;
```

```
QY      572 GAMWLFPGCRHKRDYLF 589
Db      1 GRNWLIFGNRHFRDPLY 18
```

```
RESULT 23
US-09-371-347A-32
; Sequence 32, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A,
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; TITLE OF INVENTION: DEFECTS, CARDIOVASCULAR DISEASE, AND CANCER
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; CURRENT FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 32
```

```
; LENGTH: 18
; TYPE: PRT
; ORGANISM: Homo sapiens
US-09-371-347A-32
```

```
Query Match          1.5%; Score 55; DB 1; Length 18;
Best Local Similarity 50.0%; Pred. No. 24;
Matches 9; Conservative 3; Mismatches 6; Indels 0; Gaps 0;
```

```
QY      572 GAMWLFPGCRHKRDYLF 589
Db      1 GRMVLVFGCRRPDDHLY 18
```

```
RESULT 24
US-09-371-347A-29
; Sequence 29, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A,
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; TITLE OF INVENTION: DEFECTS, CARDIOVASCULAR DISEASE, AND CANCER
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; CURRENT FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 29
; LENGTH: 18
; TYPE: PRT
; ORGANISM: Vigna radiata
US-09-371-347A-29
```

```
Query Match          1.5%; Score 54; DB 1; Length 18;
Best Local Similarity 44.4%; Pred. No. 24;
Matches 8; Conservative 4; Mismatches 5; Indels 0; Gaps 0;
```

```
QY      572 GAMWLFPGCRHKRDYLF 589
Db      1 GPALLVFGCRNRQMDPLY 18
```

```
RESULT 25
US-09-371-347A-28
; Sequence 28, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A,
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; TITLE OF INVENTION: DEFECTS, CARDIOVASCULAR DISEASE, AND CANCER
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; CURRENT FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 28
; LENGTH: 18
```

TYPE: PRT
ORGANISM: Drosophila melanogaster
US-09-371-347A-28

Query Match 1.5%; Score 53; DB 1; Length 18;
Best Local Similarity 44.4%; Pred. No. 24;
Matches 8; Conservative 4; Mismatches 6; Indels 0; Gaps 0;

Qy 572 GAMWLFPGCRHKRDYLF 589
Db 1 GSEILYFGCRKRSSEYLY 18

RESULT 26
US-09-371-347A-61
Sequence 61, Application US/09371347A
GENERAL INFORMATION:
APPLICANT: Gravel, Roy A.
APPLICANT: Rozen, Rima
APPLICANT: Leclerc, Daniel
APPLICANT: Wilson, Aaron
APPLICANT: Rosenblatt, David
TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
FILE REFERENCE: 50004/003003
CURRENT APPLICATION NUMBER: US/09/371,347A
CURRENT FILING DATE: 1999-08-10
PRIOR APPLICATION NUMBER: 09/232,028
PRIOR FILING DATE: 1999-01-15
PRIOR APPLICATION NUMBER: 60/071,622
PRIOR FILING DATE: 1998-01-16
NUMBER OF SEQ ID NOS: 61
SOFTWARE: FastSeq for Windows Version 4.0
SEQ ID NO 61
LENGTH: 9
TYPE: PRT
ORGANISM: Homo sapiens
US-09-371-347A-61

Query Match 1.4%; Score 51; DB 1; Length 9;
Best Local Similarity 100.0%; Pred. No. 26;
Matches 9; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

Qy 690 KRYLQDIWS 698
Db 1 KRYLQDIWS 9

RESULT 27
US-09-371-347A-36
Sequence 36, Application US/09371347A
GENERAL INFORMATION:
APPLICANT: Gravel, Roy A.
APPLICANT: Rozen, Rima
APPLICANT: Leclerc, Daniel
APPLICANT: Wilson, Aaron
APPLICANT: Rosenblatt, David
TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
FILE REFERENCE: 50004/003003
CURRENT APPLICATION NUMBER: US/09/371,347A
CURRENT FILING DATE: 1999-08-10
PRIOR APPLICATION NUMBER: 09/232,028
PRIOR FILING DATE: 1999-01-15
PRIOR APPLICATION NUMBER: 60/071,622
PRIOR FILING DATE: 1998-01-16
NUMBER OF SEQ ID NOS: 61
SOFTWARE: FastSeq for Windows Version 4.0
SEQ ID NO 36
LENGTH: 18
TYPE: PRT

ORGANISM: Escherichia coli
US-09-371-347A-36

Query Match 1.4%; Score 51; DB 1; Length 18;
Best Local Similarity 50.0%; Pred. No. 24;
Matches 9; Conservative 2; Mismatches 7; Indels 0; Gaps 0;

Qy 572 GAMWLFPGCRHKRDYLF 589
Db 1 GKNWLFPGNPHFTEDFLY 18

RESULT 28
US-09-371-347A-37
Sequence 37, Application US/09371347A
GENERAL INFORMATION:
APPLICANT: Gravel, Roy A.
APPLICANT: Rozen, Rima
APPLICANT: Leclerc, Daniel
APPLICANT: Wilson, Aaron
APPLICANT: Rosenblatt, David
TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
FILE REFERENCE: 50004/003003
CURRENT APPLICATION NUMBER: US/09/371,347A
CURRENT FILING DATE: 1999-08-10
PRIOR APPLICATION NUMBER: 09/232,028
PRIOR FILING DATE: 1999-01-15
PRIOR APPLICATION NUMBER: 60/071,622
PRIOR FILING DATE: 1998-01-16
NUMBER OF SEQ ID NOS: 61
SOFTWARE: FastSeq for Windows Version 4.0
SEQ ID NO 37
LENGTH: 18
TYPE: PRT
ORGANISM: Saccharomyces cerevisiae
US-09-371-347A-37

Query Match 1.4%; Score 51; DB 1; Length 18;
Best Local Similarity 44.4%; Pred. No. 24;
Matches 8; Conservative 5; Mismatches 5; Indels 0; Gaps 0;

Qy 572 GAMWLFPGCRHKRDYLF 589
Db 1 GEVFLYIGSRKREYLY 18

RESULT 29
US-09-371-347A-27
Sequence 27, Application US/09371347A
GENERAL INFORMATION:
APPLICANT: Gravel, Roy A.
APPLICANT: Rozen, Rima
APPLICANT: Leclerc, Daniel
APPLICANT: Wilson, Aaron
APPLICANT: Rosenblatt, David
TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
FILE REFERENCE: 50004/003003
CURRENT APPLICATION NUMBER: US/09/371,347A
CURRENT FILING DATE: 1999-08-10
PRIOR APPLICATION NUMBER: 09/232,028
PRIOR FILING DATE: 1999-01-15
PRIOR APPLICATION NUMBER: 60/071,622
PRIOR FILING DATE: 1998-01-16
NUMBER OF SEQ ID NOS: 61
SOFTWARE: FastSeq for Windows Version 4.0
SEQ ID NO 27
LENGTH: 18
TYPE: PRT
ORGANISM: Oryctolagus cuniculus

Query Match 0.9%; Score 31; DB 1; Length 18;
 Best Local Similarity 62.5%; Pred. No. 25;
 Matches 5; Conservative 0; Mismatches 3; Indels 0; Gaps 0;

QY 572 GAMMLFPG 579
 Db 1 GLAWLFG 8

RESULT 34

US-09-371-347A-59
 ; Sequence 59, Application US/09371347A
 ; GENERAL INFORMATION:
 ; APPLICANT: Gravel, Roy A.
 ; APPLICANT: Rozen, Rima
 ; APPLICANT: Leclerc, Daniel
 ; APPLICANT: Wilson, Aaron
 ; APPLICANT: Rosenblatt, David
 ; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
 ; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
 ; TITLE OF INVENTION: DEFECTS, CARDIOVASCULAR DISEASE, AND CANCER
 ; FILE REFERENCE: 50004/003003
 ; CURRENT APPLICATION NUMBER: US/09/371,347A
 ; CURRENT FILING DATE: 1999-08-10
 ; PRIOR APPLICATION NUMBER: 09/232,028
 ; PRIOR FILING DATE: 1999-01-15
 ; PRIOR APPLICATION NUMBER: 60/071,622
 ; PRIOR FILING DATE: 1998-01-16
 ; NUMBER OF SEQ ID NOS: 61
 ; SOFTWARE: FastSeq for Windows Version 4.0
 ; SEQ ID NO 59
 ; LENGTH: 6
 ; TYPE: PRT
 ; ORGANISM: Homo sapiens
 ; US-09-371-347A-59

Query Match 0.8%; Score 29; DB 1; Length 6;
 Best Local Similarity 100.0%; Pred. No. 26;
 Matches 6; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

QY 608 SFSRDA 613
 Db 1 SFSRDA 6

Search completed: May 9, 2005, 15:25:31
 Job time : 2 secs


```

QY 41 SerAspLysTyrAspLeuLysThrGluThrAlaProLeuValValIleValSerThrThr 60
Db 121 TCCGATAGTATGACCTTAAACCGAAGACAGCTCCTGTTGTTGGTTTCTACACAG 180
QY 61 GlyThrGlyAspProProAspThrAlaArgLysPheValLysGluLleGlnAsnGlnThr 80
Db 181 GGCACCGGAGACCCAGCCGACACAGCCCGCAAGTTGTTGAAGAAATACACAAACCA 240
QY 81 LeuProValAspPhePheAlaHisLeuArgTyrGlyLeuLeuGlyLeuGlyAspSerGlu 100
Db 241 CTGCGCGGTGATTTCTTGCTACCTGGCGATGGGTTACTGGGTTCTGGGATTCAGAA 300
QY 101 TyrThrTyrPheCysAsnGlyGlyLysLleIleAspLysArgLeuGlnGluLeuGlyAla 120
Db 301 TACACCTACTTTTGCANTGGGGGAGATATGTATTAAGCACTTCAAGACCTTGGAGCC 360
QY 121 ArgHisPheTyrAspThrGlyHisAlaAspAspCysValGlyLeuGluLeuValGlu 140
Db 361 CGGCATTTCTATGACACTGACATGACATGCTGTAGGTTTGAACCTTGTGTGAG 420
QY 141 ProThrIleAlaGlyLeuThrProAlaLeuArgLysHisPheArgSerSerArgGlyGln 160
Db 421 CCGGATTTGCTGGACTCTGGCGACCTCGAAGAGCATTTAGGTCAAGCAGAGAGCAA 480
QY 161 GluGluIleSerGlyAlaLeuProValAlaSerProAlaSerLeuArgThrAspLeuVal 180
Db 481 GAGAGATAAGTGGCGGACCTCCGGTGGCATCACCTGATCTTGAAGACAGACCTTG 540
QY 181 LysSerGlyLeuLeuLeuHisLleGluSerGlnValGluLeuLeuArgPheAspSerGly 200
Db 541 AAGTCAGAGCTGCTACACATTTGAATCTCAAGTCAGCTTCAAGATTCGAGATTCAG 600
QY 201 ArgLysAspSerGlyValAlaLeuLysGlnAsnAlaValAsnSerAsnGlnSerAsnVal 220
Db 601 AGAAGAGATTTGAGCTTTTGAAGCAAAATGCAAGTGAACAGCAACCAATCCAACTG 660
QY 221 IleGluAspPheGluSerLeuThrArgSerValProProLeuSerGlnAlaSerLeu 240
Db 661 ATTGAAGCTTTGAGTCTTACCTTACCGTTCCGATCCCACTCTCAAGACCTCTCT 720
QY 241 AsnIleProGlyLeuProProGluTyrLeuGlnValHisLeuGlnGluSerLeuGlyGln 260
Db 721 AATTTCTGCTTACCCCAAGATATTTACAGGTACATTCGACGAGTCTCTGGGCGAG 780
QY 261 GluGluSerGlnValSerValThrSerAlaAspProValPheGlnValProIleSerLys 280
Db 781 GAGGAAAGCCAGATGATGATGATTCAGACATCCAGATTCAGATTCAGATTCAG 840
QY 281 AlaValGlnLeuThrThrAsnAspAlaLleLysThrThrLeuLeuValGluLeuAspIle 300
Db 841 GCAAGTCAACTTACTTACGAATGATGCCATTAACCACTGCTGGTGAATTTGACATT 900
QY 301 SerAsnThrAspPheSerTyrGlnProGlyAspAlaPheSerValLleCysProAsnSer 320
Db 901 TCAAATTCAGACTTTTCTTACAGCTGAGATCCCTTCAAGCTGATCTGCTCAACAGT 960
QY 321 AspSerGluValGlnSerLeuGlnArgLeuGlnLeuGluAspLysArgGluHisCys 340
Db 961 GATTTCAAGGTACAAAGCTTACTCCAAAGACTGCAAGCTGCAAGTGAAGTAAAGAC 1020
QY 341 ValLeuLeuLysLleLysAlaAspThrLysLysLysGlyAlaThrLeuProGlnHisLle 360
Db 1021 GTCTTTTGAAGAAATTAAGGACAGACAAAGAAAGAGAGTACTTAACCCACACATA 1080
QY 361 ProAlaGlyCysSerLeuGlnPheThrTyrCysLeuGluLleAlaGluLlePro 380
Db 1081 CTGCGGAGATGTTCTTCCAGATTAATTTTACCTGGGTCTTGAAGCCGAGCAATTC 1140
QY 381 LysLysAlaPheLeuArgAlaLeuValAspTyrThrSerAspSerAlaGluLysArg 400
Db 1141 AAAAAGGATTTTTCGAGCCCTTGTGACTATACCGATGACAGTCTGAAAAGCGAGG 1200
QY 401 LeuGlnGluLeuCysSerLysGlnGlyAlaAlaAspTyrSerArgPheValArgAspAla 420

```

```

Db 1201 CTACAGAGCTGTACATTAACAAAGGGGACCGCATTAATAGCCGCTTTGTACAGATGCC 1260
QY 421 CysAlaCysLeuLeuAspLeuLeuLeuAlaPheProSerCysGlnProProLeuSerLeu 440
Db 1261 TGTGCTGCTTTGATGATCTCTCTCTGCTTCCCTTTCGACGACCACTAGTCTC 1320
QY 441 LeuLeuGlnHisLeuProLysLeuGlnProArgProTyrSerCysAlaSerSerLeu 460
Db 1321 CTGCTCGAATCTTCTTAACTTCAACCCAGACCAATTCGTGTGCAAGCTCAAGTTA 1380
QY 461 PheHisProGlyLysLeuHisPheValPheAsnLleValGluPheLeuSerThrAlaThr 480
Db 1381 TTTCACCGAGGAAGCTCCATTTTGTCTTCAACATTTGTGAATTTCTGTCTACGCCACA 1440
QY 481 ThrGluValLeuArgLysGlyValCysThrGlyTyrPheLeuAlaLeuValAlaSerVal 500
Db 1441 ACAGAGGTTCTGCGAAGGAGATATGTACAGGCTGGCGCTTGTGTGCTTCAGTT 1500
QY 501 LeuGlnProAsnLleHisAlaSerHisGluAspSerGlyLysAlaLeuAlaProLysLle 520
Db 1501 CTTCAGCCAAACATACATGATCCCATGAAGACAGCGGAAAGCCCTGGCTCTTAAGATA 1560
QY 521 SerLysSerProArgThrThrAsnSerPheHisLeuProAspAspProSerLleProIle 540
Db 1561 TCCATCTCTCTCGAACAACAAATTTCTTCCACTTACAGATGACCCCTCAATCCCATC 1620
QY 541 IleMetValGlyProGlyThrGlyTyrIleAlaProPheLleGlyPheLeuGlnHisArgGlu 560
Db 1621 ATAAATGGTGGGTCCAGGAACCGGATGACCCCGTTTATTTGGTTCCTTCAACATAGAG 1680
QY 561 LysLeuGlnGluGlnHisProAspGlyAsnPheGlyAlaMetTyrLeuPhePheGlyCys 580
Db 1681 AAATCTCAAGAACACACCCAGATGAAATTTTGGAGCAATTTGGTTTGGCTGC 1740
QY 581 ArgHisLysAspArgAspTyrLeuPheArgLysGluLeuArgHisPheLeuLysHisGly 600
Db 1741 AGGATTAAGATTTGAGATTTATCTTATTCAGAAAAGAGCTCAGACATTTCTTAAGCAT 1800
QY 601 IleLeuThrHisLeuLysValSerPheSerArgAspAlaProValGlyGluGluAla 620
Db 1801 ATCTTAATCATCTTAAAGGTTTCTCTTCAAGAGATCTCTGTTGGGAGAGAGAGCC 1860
QY 621 ProAlaLysTyrValGlnAspAsnLleGlnLeuHisGlyGlnValAlaArgLleLeu 640
Db 1861 CCGCAAGATATGTACAAAGCAACATCCAGCTTCAATGSCCAGCGTGGGAGAAATCTC 1920
QY 641 LeuGlnGluAsnGlyHisLleTyrValCysGlyAspAlaLysAsnMetAlaLysAspVal 660
Db 1921 CTCGAGAGAAACGGCATATTTATGTGTGTGAGATCAAAAGAAATATGGCCAAAGATGTA 1980
QY 661 HisAspAlaLeuValGlnLleLleSerLysGluValGlyValGlyLysLeuGluAlaMet 680
Db 1981 CATGATCCCTTGTGCAAAATTAATGAAGAGAGGTGGAGTTGAAAACATGAAGCAATG 2040
QY 681 LysThrLeuAlaThrLeuLysGluGluLysArgTyrLeuGlnAspLietPser 698
Db 2041 AAAACCTGGCCACTTTAAAGAAAGAAAACGCTAAGTCAAGATATTGTGCTCA 2094

```

```

RESULT 2
US-09-371-347A-24
: Sequence 24, Application US/09371347A
: GENERAL INFORMATION:
: APPLICANT: Gravel, Roy A.
: APPLICANT: Rozen, Rima
: APPLICANT: Leclerc, Daniel
: APPLICANT: Wilson, Aaron
: APPLICANT: Rosenblatt, David
: TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
: TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
: TITLE OF INVENTION: DEFECTS, CARDIOVASCULAR DISEASE, AND CANCER
: FILE REFERENCE: 50004/003003
: CURRENT APPLICATION NUMBER: US/09/371.347A

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; CURRENT FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 24
; LENGTH: 3259
; TYPE: DNA
; ORGANISM: Homo sapiens
US-09-371-347A-24

Alignment Scores:
Pred. No.: 5,66e-197 Length: 3259
Score: 3624.00 Matches: 698
Percent Similarity: 100.00% Conservative: 0
Best Local Similarity: 100.00% Mismatches: 0
Query Match: 100.00% Indels: 0
DB: 1 Gaps: 0

us-09-371-347a-2 (1-698) x US-09-371-347A-24 (1-3259)

QY 1 MeArghrPheLeuLeuLeuTyraAlaThgInngIngluAlaYsaAlaIleAlaGlu 20
Db 80 ATGAGGAGGTTTCTGTTACTATATGCTACACAGGAGGACAGGAAAGCCATCGCAGAA 139
QY 21 GluMetCysGluGlnAlaValAlaHisGlyPheSerAlaAspLeuHisCysAlleSerGlu 40
Db 140 GAAATGCTGTGACAGAGCTGTGTACATGATTTCTGCAGATCTTCATCTGATTAATGTA 199
QY 41 SerAspLeuTyraAspLeuLeuThrgLurThraAlaProLeuValAlaValSerThrThr 60
Db 200 TCCGATTAAGTATGACTTAAACCGAAACAGCTCTCTGTTGTTGTGTTTCTACACAG 259
QY 61 GlyThrgIAspProProAspThraAlaArgIysPheValIysGluIleGlnAsnGlnThr 80
Db 260 GGCAACCGGAGACCCAGCCGACAGCCGCGCAAGTTGTTAAAGAAATACAGAACCAACA 319
QY 81 LeuProValaAspPhePheAlaHisLeuArgIyrgIyLeuLeuGlyLeuGlyAspSerGlu 100
Db 320 CTGCGGGTGTGATTTCTTTGCTCACCCTCGGCTATGGGTATCTGGGTCTCGGTGATTCAGAA 379
QY 101 TyrThrTyrrPheCysAsnGlyGlyIysIleIleAspIysArgLeuGlnGluLeuGlyAla 120
Db 380 TACACCTTACTTTGCAATGCGGAGAAATGATTAACAACATTCAGAGCTTGGAGCC 439
QY 121 ArgHisPheTyrrAspThrgIyHisAlaAspAspCysValaGlyLeuGluLeuValaGlu 140
Db 440 CGGCATTTCTATGACACTGACATGACATGACATGACATGACATGACATGACATGACATGAC 499
QY 141 ProTrrIleAlaGlyLeuTrrProAlaLeuArgIyHisPheArgSerSerArgGlyGln 160
Db 500 CCGGATTTGCTGAGACTGCGCCAGCCCTCAGAAAGCATTTTAAAGGTCAAGCAGAGCAAA 559
QY 161 GluGluIleSerGlyAlaLeuProValaAlaSerProAlaSerIleuArgThrAspLeuVal 180
Db 560 GAGAGATTAAGTGGGACCTCCGCTGGCATCACTGATCTTGAAGACAGACCTTGTG 619
QY 181 LysSerGluLeuLeuHisIleGluSerGlnAlaGluLeuLeuArgPheAspAspSerGly 200
Db 620 AAGTCAGAGCTGCTACATGAAATCTCAAGTCAAGCTTTCAGAGTTGAGATTGACAGA 679
QY 201 ArgIysAspSerGluValaLeuIysGlnAsnAlaValaAsnSerAsnGlnSerAsnVala 220
Db 680 AGAAGAGATTTCTGAGGTTTGAAGCAAAATGACAGTGAACAGCAACCAATCCAAATGTTGTA 739
QY 221 IleGluAspPheGluSerLeuThrArgSerValaProProLeuSerGlnAlaSerIleu 240
Db 740 ATTAAGCTTTGATGCTCACTTACCCGTTGCGGATCCCACTCTTCAAGAGCCCTCTGTG 799
QY 241 AsnIleProGlyLeuProProGluTyrLeuGlnAlaHisLeuGlnGluSerLeuGlyGln 260

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Db 800 AATATCTCGTGTATACCCCGAATATTTACAGGTACATCTGCAGAGTCTTGGCCAG 859
QY 261 GluGluSerGlnValSerValThrSerAlaAspProValaPheGlnValProIleSerIys 280
Db 860 GAGGAAAGCCCAAGTATCTGTGACTTCCAGCATTCAGTTTTCAGAGGCCAATTTCAAG 919
QY 281 AlavaGlnLeuThrThraAsnAspAlaIleIysThrIleuLeuValGluLeuAspIle 300
Db 920 GCACTTCACTTACTACGAATGATGCCATTAACCACTGCTGCTGATGAATTCGACATT 979
QY 301 SerAsnThrAspPheSerTyrrGlnProGlyAspAlaPheSerValIleCysProAsnSer 320
Db 980 TCAATACAGACTTTTCTTCAAGCTTCAGATGATCCCTTACCGCTGATCTGCCCTTAACAGT 1039
QY 321 AspSerGluValaGlnSerLeuLeuGlnArgLeuGlnIleuGlnIleuAspIysArgIyHisCys 340
Db 1040 GATTCGAGGTTCAAGCTTACTTCCAAAGACTGCAAGCTTGAAGTAAAGAGACACTGC 1099
QY 341 ValLeuLeuIysIleIysAlaAspThrIysIysIysGlyAlaThrLeuProGlnHisIle 360
Db 1100 GTCTTTTGAATAATTAAGGACAGACAAAGAGAAAGAGACTTACCCACCATATA 1159
QY 361 ProAlaGlyCysSerLeuGlnPheIlePheThrTrrPcySleuGluIleArgAlaIlePro 380
Db 1160 CCTCGGGATGTCTCTCCAGTTTCACTTATTTTACCTGTGTCTTGAATCCGAGCAATTCCT 1219
QY 381 LysIysAlaPheLeuAspAlaLeuValAspTyrrThraSerAspSerAlaGluIysArgArg 400
Db 1220 AAAAAGGATTTTGGCAGAGCCCTGTGACTATACAGTGAAGTCAAGTGTGAAAGCCGAG 1279
QY 401 LeuGlnGluLeuCysSerIysGlnGlyAlaAlaAspTyrrSerAspPheValArgAspAla 420
Db 1280 CTACAGAGCGTGTCAATTAACAAGGGGAGCCGATTAATAGCCGCTTGTGACGATGCC 1339
QY 421 CysAlaCysLeuLeuAspLeuLeuAlaPheProSerCysGlnProProLeuSerLeu 440
Db 1340 TGTGCTGCTTGTGTGATCTCTCTCTGCTTCCCTTCCGACCACTCAAGTCTC 1399
QY 441 LeuLeuGlnHisLeuProIysLeuGlnProArgProTyrrSerCysAlaSerSerLeu 460
Db 1400 CTGCTCAAGACTTCTCTAACTTCAACCCAGACCATATGCTGTGAGAGCTCAAGTTTA 1459
QY 461 PheHisProGlyIysLeuHisPheValPheAsnIleValaGluPheLeuSerThrAlaThr 480
Db 1460 TTTCAACCGAGAAAGCTCCATTTTGTCTTCAACATTTGGAAATTTCTGTCTACGCCACA 1519
QY 481 ThrGluValaLeuArgIysGlyValaCysThrGlyTrrPheuAlaLeuLeuValaIleSerVal 500
Db 1520 ACAGAGGTTCTGCGGAGGAGGTATGTACAGGCTGGCTGGCTGTGTTGTTGCTTCAAGTT 1579
QY 501 LeuGlnProAsnIleHisAlaSerHisGluAspSerGlyIysAlaLeuAlaProIysIle 520
Db 1580 CTTCAAGCAAAATATGATGATCCCATGAAAGAGCGGAGAAAGCCCTGGCTCTTAAGATA 1639
QY 521 SerIleSerProArgTrrThraSerPheHisLeuProAspAspProSerIleProIle 540
Db 1640 TCCATCTCTCTCGAACAACAATTTCTTCCATTCACATGACACCTCATATCCCATC 1699
QY 541 IleMetValGlyProGlyIyThrgIyIleAlaProPheIleGlyPheLeuGlnHisArgGlu 560
Db 1700 ATTAATGGGGGTCCAGGAAACCGGCATAGCCCGTTTATTTGGGTCTTCAACAATAGAGAG 1759
QY 561 LysLeuGlnGluGlnHisProArgGlyAsnPheGlyIleMetTrrPhePhePheGlyCys 580
Db 1760 AAACCTCAAGAAACAACCCAGATGAAATTTTGAGCAAAATGTGTTTGTGGCTGC 1819
QY 581 ArgHisIysAspAspTyrrLeuPheArgIysGluLeuArgHisPheLeuIyHisGly 600
Db 1820 AGCGATAAGATTAAGATTAATCTATTCAGAAAAGAGCTCAGACATTTCTTAACAATGGG 1879
QY 601 IleLeuThrHisLeuIysValSerPheSerArgAspAlaProValaGlyGluGluAla 620
Db 1880 ATCTTAATCATCTAAAGGTTTCTTCTCAAGATGCTCTGTGGGAGAGAGAGGCC 1939

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QY 621 ProAlaLysTyrValGlnAspAsnIleGlnLeuHISGlyGlnGlnValAlaArgIleLeu 640
DB 1940 CCACCAAGATGATGACAGACAAACATCCAGCTTCAAGGCCAGCGGCGACAAATCTTC 1999
QY 641 LeuGlnGlnAangIYHISileTyrValCysGlyAspAlaLysAsnMetAlaLysAspVal 660
DB 2000 CTCACGAGGAACGGCCCAATTTATGTTGTGTGAGATGCAAGAAATATGCGCAAGATGTA 2059
QY 661 HisAspAlaLeuValGlnIleIleSerIleGlnValGlyValGlnIleLeuGlnAlaMet 680
DB 2060 CATATGACCCCTTGCAATATATATAGCAAGAGGTTGGAGTTGAAAACTGAAGCAATG 2119
QY 681 LysThrLeuAlaThrLeuLysGlnGlyLysArgTyrLeuGlnAspIleTyrSer 698
DB 2120 AAAACCTGGCCACTTTAAAGAAAGAAAAACGCTACCTTCAGATATTGGTCA 2173

RESULT 3
US-09-371-347A-41
; Sequence 41, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A.
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; TITLE OF INVENTION: DEFECTS, CARDIOVASCULAR DISEASE, AND CANCER
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; PRIOR FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 41
; LENGTH: 2097
; TYPE: DNA
; ORGANISM: Homo sapiens
US-09-371-347A-41

Alignment Scores:
Pred. No.: 6,44e-197 Length: 2097
Score: 3620.00 Matches: 697
Percent Similarity: 100.00% Conservative: 1
Best Local Similarity: 99.86% Mismatches: 0
Query Match: 99.89% Indels: 0
DB: 1 Gaps: 0

us-09-371-347a-2 (1-698) x US-09-371-347a-41 (1-2097)
QY 1 MetArgArgPheLeuLeuLeuTyrAlaThrGlnGlnGlnAlaLysAlaIleAlaGlu 20
DB 1 ATGAGGAGGTTTCTGTAATAATATGCTACACAGAGGAGGAGCAAGGCGCATGCGAGAA 60
QY 21 GluMetCysGlnGlnAlaValAlaHisGlyPheSerAlaAspLeuHISGlyIleSerGlu 40
DB 61 GAAATATGTGAGCAAGCTGTGTGATCATGATTTTCTGAGATCTTCACTGATTTAGTGAA 120
QY 41 SerAspLysTyrAspLeuLysThrGlnThrAlaProLeuValValAlaIleSerThrThr 60
DB 121 TCCGATATAGATATGACCTTAAACCGAAACGAGCTCTCTGTGTGTGTGTGTGTCTTCA 180
QY 61 GlyThrGlyAspProProAspThrAlaArgLysPheValLysGlnIleGlnAsnGlnThr 80
DB 181 GGCACCCGAGAGCCACCGACAGCCGCAAGTTTGTGTAAGAAATACAGAACCAACA 240
QY 81 LeuProValAspPhePheAlaHisLeuArgTyrGlyLeuLeuGlyLeuGlyAspSerGlu 100
DB 241 CTGCGGGTGTATTTCTTTGTCTCACCTGGCGATGAGGTTACTGGGTTCTGCGGATTCAGAA 300
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QY 101 TyrThrTyrPheCysAsnGlyGlyLysIleIleAspLysArgLeuGlnGlnValAla 120
DB 301 TACCTACTCTTTTGCATATGGGGGAGACATATATGATTAAGACTTCAAGAGCTTGGAGCC 360
QY 121 ArgHisPheTyrAspThrGlyHisAlaAspAspCysValGlyLeuGlnLeuValAlaGlu 140
DB 361 CGGCAATTTATGACACTGACATGACATGACTGCTGTAGGTATTAAGCTTGTGTGTGAG 420
QY 141 ProTrpIleAlaGlyLeuTrpProAlaLeuArgGlyHisPheArgSerSerArgGlyGln 160
DB 421 CCGTGATTCCTGACTCTGAGCCAGCCCGCAAGAAAGCATTTAGGTACAGCAGAGGACAA 480
QY 161 GluGlnLysSerGlyAlaLeuProValAlaSerProAlaSerLeuArgThrAspLeuVal 180
DB 481 GAGAGATTAAGTGGCGGACCTCCGCTGGCATCACTGCATCTTGAAGAGACAGACCTTGTG 540
QY 181 LysSerGlnLeuLeuHisIleGlnSerGlnValGlnLeuLeuArgPheAspSerGly 200
DB 541 AAGTCAGAGCTGTACACATTTGAATCTCAAGTCGAGCTTGTGAGATTGATTCAGAGA 600
QY 201 ArgLysAspSerGlnValLeuLysGlnAsnAlaValAsnSerGlnIleSerValVal 220
DB 601 AGAAGGATTTCTGAGGTTTGAAGCAAAATGACAGTAACAGCAACCAATCCAAATGTGTA 660
QY 221 IleGlnAspPheGlnSerSerLeuThrArgSerValProProLeuSerGlnAlaSerLeu 240
DB 661 ATTGAACATTTAGATCTCTCACTTACCCGTTGGGTACCCCACTCTCACAGCCTCTCTG 720
QY 241 AsnIleProGlyLeuProProGlyTyrLeuGlnValHisLeuGlnGlnSerLeuGln 260
DB 721 AATATTCCTGTGTTATCCCGCAATATATTTACAGGTATCATCTGACGAGGTCTCTGGCAG 780
QY 261 GlnGlnSerGlnValSerValThrSerAlaAspProValPheGlnValProIleSerLys 280
DB 781 GAGGAAAGCCAAAGTATGTGTGACTTCCAGCATTCAGTTTTCAGTGCCAAATTTCAAAG 840
QY 281 AlaValGlnLeuThrThrAsnAspAlaIleLysThrThrLeuLeuValGlnLeuAspIle 300
DB 841 GCAGTTCAACTTACTACGAATGATGACATTAAGCACTCTGCTGGTGAATTTGACATT 900
QY 301 SerAsnThrAspPheSerTyrGlnProGlyAspAlaPheSerValIleCysProAsnSer 320
DB 901 TCAATATCAGACTTTTCTTATCAGCCCTGAGAGATGCTTACGCGTGAATCTCCCTTAACAGT 960
QY 321 AspSerGlnValGlnSerLeuLeuGlnArgLeuGlnLeuGlnAspLysArgLysIleCys 340
DB 961 GATTTCTAGGTAACAAGCTTACTCCAAAGACTGCACTTGAAGATTAAGAGACACTGC 1020
QY 341 ValLeuLeuLysIleLysAlaAspThrLysLysGlyValAlaThrLeuProGlnHisIle 360
DB 1021 GTCCCTTTGAAATATTAAGGACAGACACAAAGAAAGAGACTACCTTACCCCGACATATA 1080
QY 361 ProAlaGlyCysSerLeuGlnPheIlePheThrTyrCysLeuGlnIleAlaGlnAlaPro 380
DB 1081 CCTGCGGAGATGTTCTCCAGCTCATTTTATCTGCGGTCTTGAAGAACCGAGCAATTTCT 1140
QY 381 LysLysAlaPheLeuArgAlaLeuValAspTyrThrSerAspSerAlaGlnLysArgArg 400
DB 1141 AAAAAGCATTTTGTGCAAGCCCTTGTGACTATACGATACAGTGTGTAAGAACGCGAGG 1200
QY 401 LeuGlnGlnLeuCysSerLysGlnGlyAlaAlaAspTyrSerArgPheValArgAspAla 420
DB 1201 CTACAGAGCTGTGACATTAACAAGGGGAGCGGATTAAGCGGCTTGTATACGAGATGCC 1260
QY 421 CysAlaCysLeuLeuAspLeuLeuLeuAlaPheProSerCysGlnProProLeuSerLeu 440
DB 1261 TGTGCTGCTGTGTGTGATCTCTCTCTGCTTCTCTTCCCTTCCAGCCACCACTCAAGTCTC 1320
QY 441 LeuLeuGlnHisLeuProLysLeuGlnProArgProTyrSerCysAlaSerSerLeu 460
DB 1321 CTGCTGAAACATCTTCTTAACCTTCAACCGACACATATTGCTGTCAGACTCAAGTTTA 1380
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Qy 461 PheHisProGlyLysLeuHisPheValPheAsnIleValGluPheLeuSerThrAlaThr 480
Db 1381 TTTCACCCAGAGAAAGCTCCATTTCCTTCAACATGTGGAAATTTCTGTCTACAGCCACA 1440
Qy 481 ThrGluValLeuArgLysGlyValCysThrGlyTyrPheLeuAlaLeuLeuValAlaSerVal 500
Db 1441 ACAGAGGTTCTGCGGAGAGGAGTATGTACAGCTGTGGCTTGCTGTGTTGCTTCAAGTT 1500
Qy 501 LeuGlnProAsnIleHisAlaSerHisGluPheSerGlyValAlaLeuAlaProLysIle 520
Db 1501 CTTCAGCCAAACATACATGATCCCATGAAGACAGCGGAAAAGCCCTGCTTCAAGATA 1560
Qy 521 SerIleSerProArgThrThrAsnSerPheHisLeuProAspPheProSerIleProIle 540
Db 1561 TCCATCTCTCTCTGACACAAATTTCTTCCACTTACAGATGACCCCTCAATCCCATC 1620
Qy 541 IleMetValGlyProGlyThrGlyIleAlaProPheIleGlyPheLeuGlnHisArgGlu 560
Db 1621 ATAATGGTGGTCCAGAACCGGCATAGCCCGCTTATTGGGTTCTTCAACATAGAGAG 1680
Qy 561 LysLeuGlnGluGlnHisProAspGlyAsnPheGlyAlaMetTyrPhePheGlyCys 580
Db 1681 AAATCTCCAAAGAACACACCCAGATGAAATTTGGAGCAATGTGTGTTTTTGGCTGC 1740
Qy 581 ArgHisLysAspArgAspTyrLeuPheArgLysGluLeuArgHisPheLeuLysGly 600
Db 1741 AGGCAATAGATAGGATATCTATTCAGAAAAGGCTCAGACATTTCTTACAGATGG 1800
Qy 601 IleLeuThrHisLeuLysValSerPheSerArgAspAlaProValGlyGluGluAla 620
Db 1801 ATCTTAATCATCTAAAGAGTTTCCTTCTCAAGAGATGCTCTGTTGGGAGGAGAGAAC 1860
Qy 621 ProAlaLysTyrValGlnAspAsnIleGlnLeuHisGlyGlnGlnValAlaArgIleLeu 640
Db 1861 CCACCAAGATGTACACAGAACACATCCAGCTTCAAGCCAGAGTGGCCAGATCTCTC 1920
Qy 641 LeuGlnGluAsnGlyHisIleTyrValCysGlyAspAlaLysAspMetAlaLysAspVal 660
Db 1921 CTCAGAGAGAACCGGCATATTTATGTGTGTGAGATGCAAAAGATATGTGCCAAGATTA 1980
Qy 661 HisAspAlaLeuValGlnIleIleSerLysGluValGlyValGluLysLeuGluAlaMet 680
Db 1981 CATGATGCCCTTGGCAATATATAGCAAGAGGTTGAGTTGAAAACCTAGAACATATG 2040
Qy 681 LysThrLeuAlaThrLeuLysGluGluLysArgTyrIleGlnAspIleTyrSer 698
Db 2041 AAAACCTGGCCACTTTAAAGAAAGAAAAGCTACCTTCAGATATTTGGTCA 2094

RESULT 4
US-09-371-347A-43
; Sequence 43, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A,
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; FILE REFERENCE: 50004/003003
; DEFECTS: CARDIOVASCULAR DISEASE, AND CANCER
; CURRENT APPLICATION NUMBER: US/09/371,347A
; CURRENT FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 43
; LENGTH: 2097
; TYPE: DNA
; ORGANISM: Homo sapiens

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US-09-371-347A-43
Alignment Scores:
Pred. No.: 1,576-196 Length: 2097
Score: 3613.00 Matches: 697
Percent Similarity: 99.86% Conservative: 0
Best Local Similarity: 99.86% Mismatches: 1
Query Match: 99.70% Indels: 0
DB: 1 Gaps: 0

US-09-371-347A-2 (1-698) x US-09-371-347A-43 (1-2097)
Qy 1 MetArgArgPheLeuLeuLeuTyrAlaThrGlnGlnGlnAlaLysAlaIleAlaGlu 20
Db 1 ATGAGAGGTTCTGTATCTATGCTACACAGACAGGAGCAAGCCATGCGACAA 60
Qy 21 GluMetCysGlnGlnAlaValAlaHisGlyPheSerAlaAspLeuHisCysIleSerGlu 40
Db 61 GAAATGTGTGACAAAGCTGTGTGATCATGATTTTCTGCAGATCTTCACTATATTAGTAA 120
Qy 41 SerAspLysTyrAspLeuLysThrGluThrAlaProLeuValAlaIleValSerThrThr 60
Db 121 TCCGATTAAGTATGACCTTAAACCCGAAACACCTCTCTGTGTGTGTGTTCTTACACAG 180
Qy 61 GlyThrGlyAspProProAspThrAlaArgLysPheValLysGluIleGlnAsnGlnThr 80
Db 181 GGCACCGAGACCCACCCGACACAGCCCGCAAGTTTGTTAAGAAATACAGAACCAACA 240
Qy 81 LeuProValaAspPhePheAlaHisLeuArgTyrGlyLeuLeuGlyLysAspSerGlu 100
Db 241 CTCGCGGTTGATTTCTTGTGTCTACCTGGGATAGGGTTTACGGGTCTGGATTCAGAA 300
Qy 101 TyrThrTyrPheCysAsnGlyLysIleIleAspLysAspGluGlnGlnValAla 120
Db 301 TACACCTTACTTTTCAATGGGGGAGATTAATTAATTAACATTCACAGACTTGGAGCC 360
Qy 121 ArgHisPheTyrAspThrGlnHisAlaAspAspCysValGlyLeuGluLeuValAlaGlu 140
Db 361 CGGATTTCTATGACATCGACATGCAATGATCTGTAGATTTAGAACTTGTGGTTGAG 420
Qy 141 ProTyrIleAlaGlyLeuTyrProAlaLeuArgLysHisPheArgSerArgGln 160
Db 421 CCGTGAATGTGTGACTGTGGCCAGCCCTCAGAAAGCATTTTAAAGTCAAGCAGAGACAA 480
Qy 161 GluGluIleSerGlyAlaLeuProValAlaSerProAlaSerLeuAspGlyThrAspLeuVal 180
Db 481 GAGAGATTAAGTGTGGCATCTCCCGGTGGACATCTGATCTTGAAGACAGACTTGTG 540
Qy 181 LysSerGluLeuLeuHisIleGluSerGlnValGluLeuLeuArgPheAspAspSerGly 200
Db 541 AAGTCAGAGCTGTACACATTTGAATCTCAAGTCCAGCTTCTGAGATTCGATGATTCAGGA 600
Qy 201 ArgLysAspSerGluValAlaLeuLysGlnAsnAlaValAsnSerAsnGlnSerAsnValAla 220
Db 601 AGAAGAGATCTGTAGGTTTGAACCAAAATCAGATGAACACCAACCAATCAAGTTGTA 660
Qy 221 IleGluAspPheGluSerSerLeuThrArgSerValProProLeuSerGlnAlaSerLeu 240
Db 661 ATTAAAGCTTTGAGTCTTCACTTACCCGTTCCGTGACCCCACTCTCAAGCCCTCTCTG 720
Qy 241 AsnIleProGlyLysProProGluTyrLeuGlnValHisLeuGlnGlnLysSerLeuGln 260
Db 721 AATATTCCTGTGTTTACCCCGCAATATTTTACAGTATCTTCAGAGACTCTCTTGGCCAG 780
Qy 261 GluGluSerGlnValSerValThrSerAlaAspProValPheGlnValProIleSerLys 280
Db 781 GAGGAAAGCCAAAGATCTGTGACTTCAGCAGATCCAGATTTTCAAGTGCCCAATTTCAAAG 840
Qy 281 AlaValGlnLeuThrThrAsnAspAlaIleLysThrThrLeuLeuValGluLeuAspIle 300
Db 841 GCAGTTCAACTTACTTACGAATGATGCATTAACCACTGCTGTGAGATTTGACATTT 900
Qy 301 SerAsnThrAspPheSerTyrGlnProGlyAspAlaPheSerValIleCysProAsnSer 320

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Db      901 TCAGATACAGCTTTCTTCTATCAGCTGAGATGCTTCCAGCGATGCTGCTTAACAGT 960
Qy      321 AspSerGluValGlnSerLeuLeuGlnArgLeuGlnLeuGlnAspLysArgGluHisCys 340
Db      961 GATTCTGAGGATCAAAAGCCTACTCCAAAGACTGCAAGCTTGAAGATTAAGAGACACTGC 1020
Qy      341 ValLeuLeuLysIleLysAlaAspThrLysLysGlyValAspThrLeuProGlnHisIle 360
Db      1021 GTCCCTTGAAGAAATTAAGGACAGACAAAGAAAGAGAGCTTACCTTAACCCAGCATATA 1080
Qy      361 ProLagLysSerLeuGlnPheIlePheThrTrpCysLeuGlnIleArgAlaIlePro 380
Db      1081 CTGCGGGATGTTCTCTCCAGTTCATTTTACCGTGCTCTGAAATCCGAGCAATTCCT 1140
Qy      381 LysLysAlaPheLeuArgAlaLeuValAspTrpThrSerAspSerAlaGluLysArgArg 400
Db      1141 AAAAAGCATTTTTCGAGCCCTTGCGACTATACAGTGACAGTGCTGAAGAACCGCAGG 1200
Qy      401 LeuGlnGluLeuCysSerLysGlnGlyAlaAlaAspTrpSerArgPheValArgAspAla 420
Db      1201 CTACAGAGCTGTGCAAGTAAACAAAGGGCAGCCCAATTAAGCCGCTTGTATCGAGATGCC 1260
Qy      421 CysAlaCysLeuLeuAspLeuLeuLeuAlaPheProSerCysGlnProProLeuSerLeu 440
Db      1261 TGTGCTGCTGTTGGATCTCTCCTCGCTTCCCTTCTTGCCAGCCACCACTCAGTCTC 1320
Qy      441 LeuLeuGlnHisLeuProLysLeuGlnProArgProTrpSerCysAlaSerSerLeu 460
Db      1321 CTGCTGCACAACTTCTCTAACTTCAACCCAGACCAATTCGTGTGCAAGCTCAAGTTTA 1380
Qy      461 PheHisProGlyLysLeuHisPheValPheAsnIleValGluPheLeuSerThrAlaThr 480
Db      1381 TTTTACCCAGGAAAGCTCCATTTTGTCTTCAACATTTGTGAATTTCTGTCTACTGCCACA 1440
Qy      481 ThrGluValLeuArgLysGlyValCysThrGlyTrpLeuAlaLeuValAlaSerVal 500
Db      1441 ACAGAGGTTCTGCGAAGGAGGTATGTACAGCTGGCTGGCTTGTGTGTTGCTTCACTT 1500
Qy      501 LeuGlnProAsnIleHisAlaSerHisGluAspSerGlyLysAlaLeuAlaProLysIle 520
Db      1501 CTTGAGCAACAACTATCATGATCCCATGAGACAGCGGAAAGCCCTGCGCTCTTAAGATA 1560
Qy      521 SerIleSerProArgTrpThrAsnSerPheHisLeuProAspAspProSerIleProIle 540
Db      1561 TCCATCTCTCTCGAACAACAATTTCTTCCACTTACAGATGACCCCTCAATCCCATC 1620
Qy      541 IleMetValGlyProGlyThrGlyIleAlaProPheIleGlyPheLeuGlnHisArgGlu 560
Db      1621 ATATATGGGGTCCAGGAAACCGGATAGCCCGCTTATTGGGTTCTTACAAACATAGAGAG 1680
Qy      561 LysLeuGlnGluGlnHisProAspGlyAsnPheGlyValMetTrpLeuPhePheGlyCys 580
Db      1681 AAACTCCAAAGAAACAACCCAGATGAGAAATTTGAGCAATGTGTGTTTTTGGCTGC 1740
Qy      581 ArgHisLysAspArgAspTrpLysPheArgLysGluLeuArgHisPheLeuLysHisGly 600
Db      1741 AGGGATTAAGATAGGATATCTATTCAAAAAACAGCTCAGACATTTCTTAAAGATGGG 1800
Qy      601 IleLeuThrHisLeuLysValSerPheSerArgAspAlaProValGlyGlnGluAla 620
Db      1801 ATCTTAATCATCTAAAGGTTTCTTCTCAAGAGATGCTCTGTTGGGGAGAGAGAGCC 1860
Qy      621 ProLalysTrpValGlnAspAsnIleGlnLeuHisGlyGlnGlnValAlaArgIleLeu 640
Db      1861 CCGAGCAAGATATGACAAAGACACATCCAGTTTATGCGCAGCGGCGCAGATATCTC 1920
Qy      641 LeuGlnGlnAsnGlyHisIleTrpValCysGlyAspAlaLysAsnMetAlaLysAspVal 660
Db      1921 CTCAGAGAGAAAGCCCATATTTATGTGTGTGAGATGCAAAAGATATAGCCCAAGAGAT 1980
Qy      661 HisAspAlaLeuValGlnIleIleSerLysGluValGlyValGluLysLeuGluAlaMet 680

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Db      1981 CATGATGCCCTTGTCGAATATATAGCAAGAGTTGGAATTGAAAAACTAGAACATG 2040
Qy      681 LysThrLeuAlaThrLeuLysGluLysArgTrpLeuGlnAspIleTrpSer 698
Db      2041 AAAACCTGCGCACTTTAAAAAGAAAGAAAAACGCTACCTTCAGGATATTTGTCA 2094

RESULT 5
US-09-371-347A-45
; Sequence 45, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A.
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosendietz, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; CURRENT FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 45
; LENGTH: 2094
; TYPE: DNA
; ORGANISM: Homo sapiens
US-09-371-347A-45

Alignment Scores:
Pred. No.: 2,45e-196 Length: 2094
Score: 3609.50 Matches: 697
Percent Similarity: 99.86% Conservative: 0
Best Local Similarity: 99.86% Mismatches: 0
Query Match: 99.60% Indels: 1
Gaps: 1

us-09-371-347A-2 (1-698) x US-09-371-347A-45 (1-2094)
Qy      1 MetArgArgPheLeuLeuLeuTrpAlaThrGlnGlnGlyGlnAlaLysAlaIleAlaGlu 20
Db      1 ATAGAGAGGTTTCTGTTACTATATGCTTACACAGGAGGACGCAAGGCCATCGCAGAA 60
Qy      21 GluMetCysGlnGlnAlaValAlaHisGlyPheSerAlaAspLeuHisCysIleSerGlu 40
Db      61 GAATATGTCAGCAAGCTGTGTACATGATTTTCTGCAGATCTTCACGTATTAAGAA 120
Qy      41 SerAspLysTrpAspLeuLysThrGluThrAlaProLeuValValValAlaSerThrThr 60
Db      121 TCGGATTAAGATATACCTTAACCAAGCAAGCCCTCTGTTGTTGTGTTTCTTACACAG 180
Qy      61 GluThrGlyAspProAspThrAlaArgLysPheValLysGlnIleGlnAsnGlnThr 80
Db      181 GGCACCGGAGAACCCACCCGACACAGCCCGCAAGTTTGTTAAGAAATACGAACCAACA 240
Qy      81 LeuProValAspPhePheAlaHisLeuArgTrpGlyLeuLeuGlnLysLeuAspSerGlu 100
Db      241 CTCGCGGTGATTTCTTTGCTCACCTCGCGGTATGGGTACTGGGTCTCGGTGATTCAGAA 300
Qy      101 TyrThrTrpPheCysAsnGlyGlyLysIleIleAspLysArgLeuGlnGlnLeuGlyAla 120
Db      301 TACACCTTACTTTTGCAATGGGGGAAAGATATATGATTAACGACTTCAAGAGCTTGAGCC 360
Qy      121 ArgHisPheTrpAspThrGlnHisAlaAspAspCysValGlyLeuGlnLeuValValGlu 140
Db      361 CGGCAATTTCTATACACTGCACATGCAGATGACTGTGTAGCTTTAAGACTTGTGGTTGAG 420
Qy      141 ProTrpIleAlaGlyLeuTrpProAlaLeuArgLysHisPheArgSerArgGlyGln 160

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Db 421 CCGTGATGCTGCGACCTGCGCCAGCCCTCAGAAAAGCATTTTAGTCAAGACAGAGACAA 480
Qy 161 GlnGluIleSerGIYAlaLeuProValAlaSerProAlaSerLeuArgThrsAspLeuVal 180
Db 481 GAGAGAGTAATGCGCAGCTCCGGTGCGATCAGCTGATCTTGAGGACAGACCTTGCG 540
Qy 181 LysSerGIUleuLeuHisIleGIUSeGIuValGIUleuLeuArgPheAspAspSerGIY 200
Db 541 AAGTCAGAGCTGCTACACATTGAAATCTCAAGTCCAGTCTTGAAATTCGATTCAGAGA 600
Qy 201 ArgLysAspSerGIUValLeuLysGIuAsnAlaValAsnSerAsnGIUSeGIuVal 220
Db 601 AGAAGAAGATTCAGAGTTTGAGGCAAAATGACAGACAGCAACCAATCCAAATGTGTA 660
Qy 221 IleGIUAspPheGIUSeGIUSeGIUSeGIUSeGIUSeGIUSeGIUSeGIUSeGIUSe 240
Db 661 ATTAAAGCTTTGAGTCTCAGCTTACCCGTTGCGATCCCACTCTCAAGACCTCTGCG 720
Qy 241 AsnIleProGIYLeuProGIYUTrLeuGIuValHisLeuGIuLysGIUSeGIUSeGIU 260
Db 721 AATATTCCTGCTTAAACCCCAAGATATTACAGTACATCTGCGAGAGTCTCTGCGCAG 780
Qy 261 GIUSeGIUSeGIUSeGIUSeGIUSeGIUSeGIUSeGIUSeGIUSeGIUSeGIUSeGI 280
Db 781 GAGGAAAGCCAAAGTATCTGTGACCTTCAGCAGATCCAGTTTTCAGTCCCAATTTCAAG 840
Qy 281 AlaValGIUleuThrsAsnAspAlaIleLysThrsThrsLeuLeuValGIUleuAsp 300
Db 841 GCAGATTCAACTACTACAAATGATGCCATAAAACACTCTGCTGATGAATTTGACACTT 900
Qy 301 SerAsnThrsAspPheSerGIYProGIYAspAlaPheSerValIleCysProAsnSer 320
Db 901 TCAAATACAGCTTTCTTCAATCAGCTGAGATGCTTCAAGCTGATCTGCTTACAGCT 960
Qy 321 AspSerGIUValGIUSeGIUSeGIUSeGIUSeGIUSeGIUSeGIUSeGIUSeGIUSe 340
Db 961 GATTCTGAGGTACAAAGCCTACTCCAAGACTGCGAGCTTGAAGATTAAGAGAGACATGC 1020
Qy 341 ValLeuLeuLysIleLysAlaAspThrsLysLysGIYAlaThrsLeuProGIuHisIle 360
Db 1021 GTCCCTTTGAAAATAAGGACAGACCAAGAAAGAGGTACCTTACCCAGCATTTA 1080
Qy 361 ProAlaGIYCysSerLeuGIuPheIlePheThrsThrsCysLeuGIUleuValArgAla 380
Db 1081 CTTGCGGAGATCTCTTCAAGTCAATTTTACCTGATGCTTGAATTCGAGCAATTTCT 1140
Qy 381 LysLysAlaPheLeuArgAlaLeuValAspThrsAspSerAlaGIUleuArgArg 400
Db 1141 AAAAAGGATTTTGGCAGCCCTTGCGACTATACAGTACAGTGCAGAAAGCGCAGG 1200
Qy 401 LeuGIuGIUleuCysSerLysGIuGIuAlaAlaAspThrsAspPheValArgAspAla 420
Db 1201 CTACAGAGGCTGTGAGTAAACAAGGCGCAGCCGATTTTACCCGCTTTGTACGAGATCC 1260
Qy 421 CysAlaCysLeuLeuAspLeuLeuAlaPheProSerCysGIuProProLeuSeGIU 440
Db 1261 TGTGCTGCTGTGTGATCTCTCTCTGCTTCTTCTTCTGCGACCCACCTCAGTCTC 1320
Qy 441 LeuLeuGIuHisLeuProLysLeuGIuProArgProArgProArgCysAlaSerSerLeu 460
Db 1321 CTGCTCGAAGATCTTCTTAACTTCAACCAAGACCATATTTGTGTGCAAGCTCAAGTTA 1380
Qy 461 PheHisProGIYLysLeuHisPheValPheAsnIleValGIUleuLeuSerThrsAla 480
Db 1381 TTTTCAACCGAGAAAGCTCCATTTGTCTTCAACATGTGGAATTTCTGTCTACATGCCA 1440
Qy 481 ThrGIUValLeuArgLysGIYValCysThrsGIYTrPLeuAlaLeuLeuValAlaSerVal 500
Db 1441 ACAAGAGTTTGTGGAGAGAGATGTACAGGCTGCGCTGTGTGTGTGTGTGTGTGTGT 1500
Qy 501 LeuGIuProAsnIleHisAlaSerHisGIUAspSerGIYLysAlaLeuAlaProLysIle 520
Db 1501 CTTGAGCCAAACATATCATGATCCATGATGAGACGCGGAAAGCCCTGCTCTTAAAGTA 1560

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Qy 521 SerIleSerProArgThrsAsnSerPheHisLeuProAspAspProSerIleProIle 540
Db 1561 TCATCTCTCTCTCGAACAACAATTTCTTTCATCTTACAGATGACCCCTCATATCCCATC 1620
Qy 541 IleMetValGIYProGIYThrsGIYIleAlaProPheIleGIYLeuGIuHisArgGIU 560
Db 1621 ATTAATGGGTGCTCAGGAAACCGGATAGCCCGCTTTATGTGGTTCCTTACATATGAGAG 1680
Qy 561 LysLeuGIuGIuGIuHisProAspGIYAsnPheIleValaMetTrPLeuPhePheGIY 580
Db 1681 AAATCCAGAAACAACCCAGATGAGAAATTTTGAGCAATGTG---TTTTTGGCTGC 1737
Qy 581 ArgHisLysAspAspArgGIYTrLeuPheArgLysGIUleuArgHisPheLeuLysHisGI 600
Db 1738 AGCATTAAGATAGATATATCTATTTTCAGAAAGAGCTCAGACATTTCTTAAAGCATGG 1797
Qy 601 IleLeuThrsHisLeuLysValSerPheSerArgAspAlaProValGIYGIUleuGIU 620
Db 1798 ATCTTAATCATCTTAAAGGTTTCTTCTTCAAGATGCTCTGTGGGAGAGAGAGCC 1857
Qy 621 ProAlaLysTrYValGIuAspAsnIleGIuLeuHisGIYGIuGIuValAlaArgIleLeu 640
Db 1858 CCAGCAAAAGTATGTACAAAGCAACATCAGCTTCATGCGCCAGCGTGGCGAGATCTCTC 1917
Qy 641 LeuGIuGIuAsnGIYHisIleTrYValCysGIYAspAlaLysAsnMetAlaLysAspVal 660
Db 1918 CTCCAGAGAGAGCCCATATTATATGTGTGTGAGATGCAAGATATAGCCAGAGATGTA 1977
Qy 661 HisAspAlaLeuValGIuIleIleSerLysGIUValGIYAlaGIUleuGIUAlaMet 680
Db 1978 CATGATGCCCTTGTGCAAAATATATAGCAAGAGGTGTGAGTGAATAAATGAAAGCATG 2037
Qy 681 LysThrsLeuAlaThrsLeuLysGIUleuLysArgTrYTrLeuGIuAspIleTrPser 698
Db 2038 AAAACCTGCGCACCTTTAAAGAAAGAAACGTTACCTTCAGATATTGTGTCA 2091

RESULT 6
US-09-371-347A-47
; Sequence 47, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A.
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosendiat, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; TITLE OF INVENTION: DEFECTS, CARDIOVASCULAR DISEASE, AND CANCER
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; PRIOR FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 47
; LENGTH: 2093
; TYPE: DNA
; ORGANISM: Homo sapiens
US-09-371-347A-47

Alignment Scores:
Pred. No.: 2,76e-195 Length: 2093
Score: 3590.50 Matches: 696
Percent Similarity: 99.71% Conservativity: 0
Best Local Similarity: 99.71% Mismatches: 1
Query Match: 99.08% Indels: 2
DB: 1 Gaps: 1

us-09-371-347a-2 (1-698) x US-09-371-347a-47 (1-2093)

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Qy      1 MetArgArgPheLeuLeuTyrAlaThrGlnGlnGlnAlaIleAlaGlu 20
Db      1 ATGAGAGAGTTCTGTTACTATATGCTACAGAGGAGGAGCAAGCCATGCGA 60
Qy      21 GluMetCysGlnGlnAlaValAlaHisGlyPheSerAlaAspLeuHisCysIleSerGlu 40
Db      61 GAATGATGTGAGCAAGCTGTGGTACATGATTTTCTGAGATCTTCACTGATTAATG 120
Qy      41 SerAspLysTyrAspLeuLysThrGluThrAlaProLeuValValValSerThrThr 60
Db      121 TCCGATTAAGTATGACCTTAATAAACCCAAACACCTCTCTTGTGTGGTTTCAACA 180
Qy      61 GlyThrGlyAspProAspThrAlaArgLysPheValLysGlnIleGlnAsnGlnThr 80
Db      181 GGCAACCGAGACCCACCCGACACAGCCGCAAGTTGTTAAGAAATACAGAACCAACA 240
Qy      81 LeuProValAspPhePheAlaHisLeuArgTyrGlyLeuLeuGlyLeuGlyAspSerGlu 100
Db      241 CTGCGCGGTGATTTCTTTGCTCACCTGGCGTATGGGTACTGGGCTCGGTGATTCAGAA 300
Qy      101 TyrThrTyrPheCysAsnGlyGlyLysIleIleAspLysArgLeuGlnIleGlyAla 120
Db      301 TACACCTACTTTTGCATGAGGAGGAGATTAATGATTAACGACATTCAGACCTTGGAGCC 360
Qy      121 ArgHisPheTyrAspThrGlyHisAlaAspAspCysValGlyLeuGluLeuValValGlu 140
Db      361 CGGCAATTTCTATGACATCGACATCGACATGACTGTGATTAAGAACTTGTGCTGAG 420
Qy      141 ProTyrIleAlaGlyLeuTyrProAlaLeuArgLysHisPheArgSerArgGlyGln 160
Db      421 CCGTGAGATTCGTGACTCTGCGCAGCCCTCAGAAAGCATTTTAAAGTCAAGAGAGACAA 480
Qy      161 GlnGluIleSerGlyAlaLeuProValAlaSerProAlaSerLeuArgThrAspLeuVal 180
Db      481 GAGAGAAATAGTGGCGACCTCCGATGACATCCTGATCTTGAGAGACAGACCTTGTG 540
Qy      181 LysSerGlnLeuLeuHisIleGlnSerGlnAlaGlnLeuLeuArgPheAspAspSerGly 200
Db      541 AAGTCAGAGCTGCTACACATTCGATTCGAGCTTCTGAGATTCGATTCAGAGATTCAGGA 600
Qy      201 ArgLysAspSerGlnValLeuLysGlnAsnAlaValAsnSerAsnGlnSerAsnVal 220
Db      601 AGAAGAGATCTCGAGTTTGTGACCAAAATGACAGTGAACAGCAATCCAAATGTTGTA 660
Qy      221 IleGluAspPheGlnSerSerLeuThrArgSerValProProLeuSerGlnAlaSerLeu 240
Db      661 ATTGAAGCTTTGAGTCTCTACCTTACCCGTTCCGATCCCACTCTCAAGCCCTCTCTG 720
Qy      241 AsnIleProGlyLeuProProGlyTyrLeuGlnValHisLeuGlnGlnSerLeuGln 260
Db      721 AATATTCCTGGTTTACCCTCCAGATATTTTACAGTATCATCTCGAGAGTCTCTTGGCAG 780
Qy      261 GlnGlnSerGlnValSerValThrSerAlaAspProValPheGlnValProIleSerLys 280
Db      781 GAGAGAAAGCCAAATATCTGTGACTTCAGCATCCAGATCTTTCAGTGCCCAATTTCAAG 840
Qy      281 AlaValGlnLeuThrThrAsnAspAlaIleLysThrThrLeuLeuValGlnLeuAspIle 300
Db      841 GCAATTCACCTTACTAGATGATGATGCAATTAATAACCACTCTGCTGAGTAAATGGAACAT 900
Qy      301 SerAsnThrAspPheSerTyrGlnProGlyAspAlaPheSerValIleCysProAsnSer 320
Db      901 TCAATATCAGACTTTTCTTATCAGCTCGAGATGCTTTCAGCGTGAATCTGGCCCTTAACGT 960
Qy      321 AspSerGlnValGlnSerLeuLeuGlnArgLeuGlnLeuGlyAspLysArgGlyHisCys 340
Db      961 GATTCCTAGGTACCAAGCTTACTCCAAAGACTGCAAGCTTGAGATTAATAAGAGACACTGCG 1020
Qy      341 ValLeuLeuLysIleLysAlaAspThrLysLysValGlyAlaThrLeuProGlnHisIle 360
Db      1021 GTCTTTTGAATAAAGGACAGACACAAAGAAAGAGAGTACTTACCCCAACATATA 1080

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Qy      361 ProAlaGlyCysSerLeuGlnPheIlePheThrTyrCysLeuGlnIleArgAlaIlePro 380
Db      1081 CTGCGGAGATGTTCTTCCAGTTCATTTTATCCGTGTGTTGAAATCCAGCAATTCCT 1140
Qy      381 LysLysAlaPheLeuArgAlaLeuValAspTyrThrSerAspSerAlaGlnLysArgArg 400
Db      1141 AAAAAGCATTTTTCGAGCCCTTGTGACTATACAGTACAGTCAAGTCTGAAAAGCCGAGG 1200
Qy      401 LeuGlnGlnLeuCysSerLysGlnGlyAlaAlaAspTyrSerArgPheValArgAspAla 420
Db      1201 CTACAGAGGCTGTGACATTAACAAAGGGGACCGCATTAATAGCCGCTTTGACAGATGCC 1260
Qy      421 CysAlaCysLeuLeuAspLeuLeuAlaPheProSerCysGlnProProLeuSerLeu 440
Db      1261 TGTGCTGCTGTTGGATCTCTCTCTGCTTCCCTTCTTGCCAGCCACCACTCAGTCTC 1320
Qy      441 LeuLeuGlnHisLeuProLysLeuGlnProArgProTyrSerCysAlaSerSerLeu 460
Db      1321 CTGCTCGAACATCTTCTTAACCTTCAACCCAGACCATATTCGTGTCMACTCAAGTTTA 1380
Qy      461 PheHisProGlyLysLeuHisPheValPheAsnIleValGluPheLeuSerThrAlaThr 480
Db      1381 TTTCACCCAGAGAAAGCTCCATTTTGTCTTCAACATTTGGAATTTCTGTACTGCGACA 1440
Qy      481 ThrGluValLeuArgLysGlyValCysThrGlyTyrProLeuAlaLeuLeuValAlaSerVal 500
Db      1441 ACAGAGTTCCTGCGGAAGGAGATATGACAGGCTGCTGCTGTTGTTGTTGCTTCACT 1500
Qy      501 LeuGlnProAsnIleHisAlaSerHisGlnAspSerGlyLysAlaLeuAlaProLysIle 520
Db      1501 CTTTCAGCCAAACATACATGATGATCCCATGAAGACGCGGAAACCCCTGCTCTTAAGATA 1560
Qy      521 SerIleSerProArgThrThrAsnSerPheHisLeuProAspAspProSerIleProIle 540
Db      1561 TCCATCTCTCTCGAACAACAAATTTCTTCCACTTACCAATGACCCCTCAATCCCATC 1620
Qy      541 IleMetValGlyProGlyThrGlyIleAlaProPheIleGlyPheLeuGlnHisArgGlu 560
Db      1621 ATATAGTGGGTCCAGGAACCGGACATAGCCCGTTTATGCGTTTCTTCAACAATAG --- 1676
Qy      561 LysLeuGlnGlnGlnHisProAspGlyAsnPheGlyAlaMetTrpLeuPhePheGlyCys 580
Db      1677 AAATCCMAAMACAAACCCAGATGGAATTTTGAGCAATGTGTGTTTGTGCTGC 1736
Qy      581 ArgHisLysAspArgAspTyrLeuPheArgLysGlnLeuArgHisPheLeuLysHisGly 600
Db      1737 AGGCATAGAGATAGGATTTATCTATTCAGAAAAGAGCTCAGACATTTCTTAAGCATGG 1796
Qy      601 IleLeuThrHisLeuLysValSerPheSerArgAspAlaProValGlyGlnGlnAla 620
Db      1797 ATCTTAATCATCTTAAGGTTTCTTCTCTCAAGAGATGCTCTGTGGCGAGAGAAAGCC 1856
Qy      621 ProAlaLysTyrValGlnAspAsnIleGlnLeuHisGlyGlnIleValAlaArgIleLeu 640
Db      1857 CCAAGCAAGATATTAACAAGCAACATCCACATTCATGCGCAGACAGGTGGGAAATCTTC 1916
Qy      641 LeuGlnGlnAsnGlyHisIleTyrValCysGlyAspAlaLysAsnMetAlaLysAspVal 660
Db      1917 CTCGAGAGAACCGCCATATTTATGTGTGAGAGATGCAAAAGATATGCGCAAGATGTA 1976
Qy      661 HisAspAlaLeuValGlnIleIleSerLysGlnValGlyValGlnLysLeuGlnAlaMet 680
Db      1977 CATGATGCCCTTGTGCAATATATAGCAAAAGAGAGTGTGAATTAATAAATCAGAAACATG 2036
Qy      681 LysThrLeuAlaThrLeuLysGlnGlnLysArgTyrLeuGlnAspIleTrpSer 698
Db      2037 AAAACCTGCGCACTTTAAAGAAAGAAACGCTTACCTTCAAGATATTTGTGTA 2090

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RESULT 7
 US-09-371-347A-51/c
 ; Sequence 51, Application US/09371347A
 ; GENERAL INFORMATION:
 ; APPLICANT: Gravel, Roy A.

```

; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; PRIOR FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 51
; LENGTH: 2187
; TYPE: DNA
; ORGANISM: Homo sapiens
US-09-371-347A-51

Alignment Scores:
Pred. No.: 14.7 Length: 2187
Score: 54.00 Matches: 36
Percent Similarity: 30.82% Conservative: 9
Best Local Similarity: 24.66% Mismatches: 56
Query Match: 1.49% Indels: 45
DB: 1 Gaps: 5

us-09-371-347a-2 (1-698) x US-09-371-347A-51 (1-2187)
Qy 432 ProSerCyGlnProProLeuSerLeuLeuGluHisLeuProLysLeuGlnProArg 451
Db 1924 CCAATGTCCTCTCCACCA-----CTGCC 1901
Qy 452 ProTyrSerCyAlaSerSerLeuPheHisProGly-LysLeuHisPheValPheAs 471
Db 1900 AGAGGCACTTCCAGTGGAGATGATTCACCAAGGTTGACCGAGAGTAGT----- 1846
Qy 471 nIleValGluPheLeuSerThrAlaThrGluValLeuArgLysGlyValCysThrG 491
Db 1845 -----GTCGTGATGTACTGATGATGATGATGCGGAGCGGG 1811
Qy 491 YTrPLeuAlaLeuLeuValAlaSerValLeuGlnProAsn-----IleHisAl 507
Db 1810 ACTCCTCTCTATACAGCTTCCCAACCGCTCATTCACAGGCGCAAGGCTGTCCTTCC 1751
Qy 507 aSerHisGluAspSerGlyLysAlaLeuAlaProLysIleSerIleSerProArgThrTh 527
Db 1750 AGAACATGACCTGACGGGATCCACTACGGTGGCTGATGATCTCTGCCAGG----- 1696
Qy 527 rAsnSerPheHisLeuProAspAspProSerIleProIleIleMetValGlyProGlyTh 547
Db 1695 -----GAAAGATGCCCAAGTGAAGACAGCATTCGGCTGCGAGTTCAGGGCAT 1652
Qy 547 rGly-----IleAlaProPheIleGlyPheLe 556
Db 1651 TGGTGATGTTTTCACCTTCACATTGACAGAGTGTAATTAAACCGGAGCTGTAATTCT 1592
Qy 556 uGlnHisArgGluLys 561
Db 1591 TCAGCACTTCGAGAG 1576

RESULT 8
US-09-371-347A-51
; Sequence 51, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A,
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David

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; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; PRIOR FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 51
; LENGTH: 2187
; TYPE: DNA
; ORGANISM: Homo sapiens
US-09-371-347A-51

Alignment Scores:
Pred. No.: 18 Length: 2187
Score: 52.00 Matches: 124
Percent Similarity: 31.52% Conservative: 73
Best Local Similarity: 19.84% Mismatches: 195
Query Match: 1.43% Indels: 235
DB: 1 Gaps: 31

us-09-371-347a-2 (1-698) x US-09-371-347A-51 (1-2187)
Qy 63 GlYAspProAspThrAlaArgLysPheValIleGluAsnGlnThrLeuPro 82
Db 475 GGAAGACCA-----ATAGTGACAGTGGAGGAGGAGGAGGAGGCTTCACTACCGCA 528
Qy 83 ValAspPhePheAlaHisLeuArg-----TyrGlyLeuLeuGlyLeuGlyAspSerGlu 100
Db 529 GTGACCTGTGAACACATCCGAAGTGAAGTTGCT-----GAC 567
Qy 101 TyrThrTyrPheCyAsnGlyGlyLysIleIleLeuAspLysArgLeuGlnIleGlyAla 120
Db 568 TACTTGACATCTGTGGCGAGT----- 591
Qy 121 ArgHisPheTyrAspThrGlyHisAlaAspAspCysValGlyLeuGluLeuValGlu 140
Db 592 -----TACCCCAAGGCCACCCGGA----- 612
Qy 141 ProTrpIleAlaGlyLeuTrpProAlaLeuArgLysHisPheArgSer-----SerArg 158
Db 613 -----GCAAGGAGCTTTGAGGCTGACCTGAAGCACTTGAAGAGAGAGGTGTGCG 663
Qy 159 GlyGlnGluGluIle----- 163
Db 664 GGAAGCCATTTCATCATCAGCAGACTTTCTTTAGAGCTGACACATTTCTCCGTTGTG 723
Qy 164 -----SerGlyAlaLeuProValAla 170
Db 724 AAGGATGACCGACATGAGGATCATTTGCCCATGCGGAGATCTTCCATCCACAG 783
Qy 171 SerProAlaSerLeuAlaGlyThrAspLeuValIlySerGluLeuLeuHisIleGluSerGln 190
Db 784 GGTACACATCTCTTCGG---CAAGTTGTGAAGCTGTCCAAAGCTGAGAGTCCACAGAG 840
Qy 191 ValGluLeuLeuArgPheAspAspSerGlyArgLysAspSerGluVal-LeuLysGlnAs 210
Db 841 ATCAAG-----GACGTGATTGACCAATC 864
Qy 210 nAlaValAsnSerAsnGlnSerAsnValIleGluAspPheGluSerSerLeuThrAr 230
Db 865 AAAGACAAGATGCTGCATCCGCAACTATGACATGACGTGGCGGATGAGCTGTGCAG 924
Qy 230 gSerValProProLeuSer-----GlnAlaSer----- 239
Db 925 GAGCTTGTGGCAATGCTGTGTCGACAGGCTTCACATTTCACACCTTCACCGGAGATG 984
Qy 240 -----LeuAsnIleProGlyLeuPro 247

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Db      985 GCTACACAGAGGCTGTAAGGCGCTGGGAGATGTGACTGAGAGACCCAGCGTCCCTTA 1044
Qy      247 ogluYrleuGlInhIsleuGlInuSerleuGlInuSerGlnValSerVa 267
Db      1045 CCCTGGGCTCTCAGTCCAGCCCAAGGCC-----GAGAGAGAGATGTACGT 1092
Qy      267 lThSerAlaAspProValPheGln-----ValProIleSerLysAlaVa 282
Db      1093 CCCTCTCTTCTGGGCTCCAGACCAAGATTACATCTACCTTACCAGAGATGGAGACG 1152
Qy      282 lGlnLeuThrThrsAsnAlaIle-----LysThrTh 293
Db      1153 TTCCCTTAACGCGCCCTGGGCAATTCTCTCCCTGCTTTGGGAGAGCTGAGAGACTAC 1212
Qy      293 rLeu----- 294
Db      1213 TACCTCTTCTACCTGAGAGAGCAAGTCCCCCAAGAGAGAGCTGTGAGAGATGGGGGAG 1272
Qy      295 -----LeuValGlnLeuAspIleSerAsnThrsAspSerTyrgInProGlyAs 311
Db      1273 GAGCTGACCACTGAGAGCAAGTGTCTTGAAGTCTTGTCTTCTTACCTCTCGGAGAACCA 1332
Qy      311 palAspSerVal-----lLeCysProAsnSerAspSerGlnVal----- 324
Db      1333 AACCGAATGTGTCAAAAGTACTGTGCTGCTGCTGCG--AACGATAGCCCTGGCGGCTGA 1391
Qy      325 -GlnSerleuLeuGlnInrGleuGlnLeuGlnAspLysArgLysValLeuLeuLys 344
Db      1392 GACCAAGCTGTCTGAAGAGAGAGAGCTGCTGGGCTGAACCGGCACTCTCACCATTCAA 1451
Qy      344 sileLysAlaAspThrsLysLysGlyAlaThrLeuProGlnHisleProAlaGlyCy 364
Db      1452 CTCACAGCCCAACATCAACGGGAGCGGTCTCCGAGCC--ATCGTGGGCTGGGGGCC 1508
Qy      364 sSerleuGlnPheIlePheThrTrpCysLeuGlnIleArgAlaIleProLysAlaPh 384
Db      1509 CAGCGGGGCTATGCTTTC-----CAGAAAGGCTTA 1538
Qy      384 eleuArgAlaLeuValAspTyThrSerAspSerAlaGlnLysArgLysGlnGlnLeu 404
Db      1539 CTTAGAGATT-----TTCACTTCCCGGAGACACGGAGCACTTCTGCAAGTGTCT 1589
Qy      404 uCysSerLysGlnGlyAlaAlaAspTyThrSerArgPheValArgAspAlaCysAlaCysLe 424
Db      1590 GAAGAAGTACAGACTCCGGTAAATTACAC-----CT 1622
Qy      424 uLeuAspLeu-----LeuLeuAlaPheProSerCysGlnProProLeuSerLe 440
Db      1623 TGTCAATGTGAAGGTGAAMAAATCACCACATGCCCTGACCTGACAGCCGAT--GCTGT 1679
Qy      440 uLeuLeuGlnHisleuProLysLeuGlnProArgProTySerCysAlaSerSerLe 460
Db      1680 CAC-TTGGGGGATTTCCCTTGGGAGAGATCATCCAGCCACCGTGTGATGATCCCGTCA 1738
Qy      460 uPheHisProGlyLysLeuHisPheValPheAsnIleValGlnPheLeuSerThrAlaTh 480
Db      1739 GCTTCAAT-----GTCTCGAA----- 1754
Qy      480 rThnGlnValLeuArgLysGlyValCysThrGlyTrpLeuAlaLeuValAla----- 498
Db      1755 -----GAGAGAGCCCTTTGGCTGTGATGAGCGGTGGGAGAAAGCTGATG 1801
Qy      499 -----SerValLeuGlnProAsnIleHisAlaSerHisGlnAspSerGlyLysAlaLeuAl 517
Db      1802 AGGAGAGAGTCCCGCTCCGACCATTCATCCAGTACAT----- 1838
Qy      517 aProLysIleSerLieserProArgTrnThrsAsnSerPheHisleuProAspAspProse 537
Db      1839 -----CCACGACAACATA-----CTTCTGTGTCAACCTGG 1867
Qy      537 r-----lLeProIleIleMetValGlyProGlyThnGlyIleAlaProIleIleG 554

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Db      1868 TGCAATAGACTTCC-----ACTGACAACTGCTCTGGAGG 1906
Qy      554 yPheLeuGlnHisArgLysLysLeuGlnGlnHisPro-----AspGlyAsnPheG 572
Db      1907 TGTGTGAAGACACTTGTGAGCTTCTCAACAGGCCACCCAGAAATGCAAGAAACGAGG 1966
Qy      572 yAlaMetTrpLeu 576
Db      1967 CTCATGACCCTG 1979

RESULT 9
US-09-371-347A-1/c
; Sequence 1, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A.
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; TITLE OF INVENTION: DEFECTS, CARDIOVASCULAR DISEASE, AND CANCER
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; PRIOR FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 1
; LENGTH: 2097
; TYPE: DNA
; ORGANISM: Homo sapiens
US-09-371-347A-1

Alignment Scores:
Pred. No.: 21.3 Length: 2097
Score: 50.00 Matches: 23
Percent Similarity: 39.33% Conservative: 12
Best Local Similarity: 25.84% Mismatches: 38
Query Match: 1.38% Indels: 17
Gaps: 2

us-09-371-347a-2 (1-698) x US-09-371-347A-1 (1-2097)

Qy      419 AspAlaCysAlaCysLeuLeuAspLeuLeuAlaPheProSerCysGlnProProLeu 438
Db      1894 GAAGCTGATGTTGTCTTGTATACATCTTGTCTGCGCTCTCTCCCAACAGAGACAT 1835
Qy      439 SerLeuLeuGlnGlnHisleuProLysLeuGln----- 449
Db      1834 CTCTTGAGAGAAACCTTTAGATGATTAAGATCCCATCTTAAGAAATGCTGAGCT 1775
Qy      450 -----ProArgProTySerCysAlaSerSerLeuPheHisPro 463
Db      1774 CTTTTGATAGATATATCCCTTATCCCTTATCCCTGACGCAAAAACAAACA--CATTC 1717
Qy      464 GlyLysLeuHisPheValPheAsnIleValGlnPheLeuSerThrAlaThnGlnVal 483
Db      1716 TCCAAATTTCCATCTGGGATGTTGTTCTTGTGAGATTCTCTCT--ATGTTGAGAAACC 1660
Qy      484 LeuArgLysGlyValCysThrGlyTrp 492
Db      1659 AATTAACGGGCTATGCGGATTCCTGG 1633

RESULT 10
US-09-371-347A-41/c
; Sequence 41, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A.
; APPLICANT: Rozen, Rima

```

```
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; TITLE OF INVENTION: DEFECTS, CARDIOVASCULAR DISEASE, AND CANCER
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; PRIOR FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 41
; LENGTH: 2097
; TYPE: DNA
; ORGANISM: Homo sapiens
US-09-371-347A-41

Alignment Scores:
Pred. No.: 21.3      Length: 2097
Score: 50.00      Matches: 23
Percent Similarity: 39.33%      Conservative: 12
Best Local Similarity: 25.84%      Mismatches: 38
Query Match: 1.38%      Indels: 17
DB: 1      Gaps: 2

us-09-371-347a-2 (1-698) x US-09-371-347A-41 (1-2097)

Qy 419 AsplaCysAlaCySLeuLeuAspLeuLeuAlaPheProSerCySgInProProLeu 438
Db 1894 GAACGTGATGTTGCTTGTACATACATTGCTGGGGCTTCTCTCCCTCCCAACAGAGCAT 1835
Qy 439 SerLeuLeuLeuGluHisLeuProLySLeuGln----- 449
Db 1834 CTCTTGAGAGAGAAACCTTTGATGATGATTAGATCCCATGCTTAAGAAATGTCGAGCT 1775
Qy 450 -----ProArgProTySerCySAlaSerSerLeuPheHisPro 463
Db 1774 CTTTTCGATAGATAGATATCCCTATGCTGACCAAAAAACAACA--CATTGC 1717
Qy 464 GlyLySLeuHisPheValPheAsnIleValGluPheLeuSerThrAlaThrThGluVal 483
Db 1716 TCCAAATTTCCATCTGGGTGTGTTCTTGAGATTCTCTCT--ATGTTGAGGAACCC 1660
Qy 484 LeuArgLySgLyValCySThrGlyTyr 492
Db 1659 AATAAACGGGCGCTATGCCGTTCTCG 1633

RESULT 11
US-09-371-347A-43/c
; Sequence 43, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Rozen, Roy A,
; APPLICANT: Kima,
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; TITLE OF INVENTION: DEFECTS, CARDIOVASCULAR DISEASE, AND CANCER
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; PRIOR FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 43
```

```
; LENGTH: 2097
; TYPE: DNA
; ORGANISM: Homo sapiens
US-09-371-347A-43

Alignment Scores:
Pred. No.: 21.3      Length: 2097
Score: 50.00      Matches: 23
Percent Similarity: 39.33%      Conservative: 12
Best Local Similarity: 25.84%      Mismatches: 38
Query Match: 1.38%      Indels: 17
DB: 1      Gaps: 2

us-09-371-347a-2 (1-698) x US-09-371-347A-43 (1-2097)

Qy 419 AsplaCysAlaCySLeuLeuAspLeuLeuAlaPheProSerCySgInProProLeu 438
Db 1894 GAACGTGATGTTGCTTGTACATACATTGCTGGGGCTTCTCTCCCTCCCAACAGAGCAT 1835
Qy 439 SerLeuLeuLeuGluHisLeuProLySLeuGln----- 449
Db 1834 CTCTTGAGAGAGAAACCTTTGATGATGATTAGATCCCATGCTTAAGAAATGTCGAGCT 1775
Qy 450 -----ProArgProTySerCySAlaSerSerLeuPheHisPro 463
Db 1774 CTTTTCGATAGATAGATATCCCTATGCTGACCAAAAAACAACA--CATTGC 1717
Qy 464 GlyLySLeuHisPheValPheAsnIleValGluPheLeuSerThrAlaThrThGluVal 483
Db 1716 TCCAAATTTCCATCTGGGTGTGTTCTTGAGATTCTCTCT--ATGTTGAGGAACCC 1660
Qy 484 LeuArgLySgLyValCySThrGlyTyr 492
Db 1659 AATAAACGGGCGCTATGCCGTTCTCG 1633

RESULT 12
US-09-371-347A-24/c
; Sequence 24, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Rozen, Roy A,
; APPLICANT: Kima,
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; TITLE OF INVENTION: DEFECTS, CARDIOVASCULAR DISEASE, AND CANCER
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; PRIOR FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 24
; LENGTH: 3259
; TYPE: DNA
; ORGANISM: Homo sapiens
US-09-371-347A-24

Alignment Scores:
Pred. No.: 27.7      Length: 3259
Score: 50.00      Matches: 23
Percent Similarity: 39.33%      Conservative: 12
Best Local Similarity: 25.84%      Mismatches: 38
Query Match: 1.38%      Indels: 17
DB: 1      Gaps: 2

us-09-371-347a-2 (1-698) x US-09-371-347A-24 (1-3259)

Qy 419 AsplaCysAlaCySLeuLeuAspLeuLeuAlaPheProSerCySgInProProLeu 438
```

```
Db 1973 GAAGTGGATGTTGCTTGATACACTTTCGCGGGCTCTCTCTCCCAACAGAGCAT 1914
Qy 439 SerLeuLeuLeuGluHisLeuProLysLeuGln----- 449
Db 1913 CTCCTTGAGAGGAAACCTTTGATGATGATTAGATCCCATGCTTAAGAAATGTGAGCT 1854
Qy 450 -----ProArgProTyrSerCysAlaSerSerSerLeuPheHisPro 463
Db 1853 CTTTTCGATAGATATATCCCTATCTTATGCTGCTGACGCAAAAAACACCA--CATTGC 1796
Qy 464 GlyLysLeuHisPheValPheAsnLeuValGluPheLeuSerThrAlaThrGluVal 483
Db 1795 TCCAAATTTCCATCTGGGTGTGTTCTTGAGATTCTCTCT--ATGTTGAGGAACCC 1739
Qy 484 LeuArgLysGlyValCysThrGlyTyr 492
Db 1738 AATAAACGGGCTATGCGGTTCTCTCG 1712
```

RESULT 13

```
US-09-371-347A-45/c
; Sequence 45, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Rozen, Roy A,
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; PRIOR FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 45
; LENGTH: 2094
; TYPE: DNA
; ORGANISM: Homo sapiens
US-09-371-347A-45
```

Alignment Scores:

```
Pred. No.: 22.3 Length: 2094
Score: 49.50 Matches: 17
Percent Similarity: 38.46% Conservative: 8
Best Local Similarity: 26.15% Mismatches: 21
Query Match: 1.37% Indels: 19
Gaps: 2
```

us-09-371-347a-2 (1-698) x US-09-371-347A-45 (1-2094)

```
Qy 419 AspaLacysAlaCysLeuLeuAspLeuLeuAlaPheProSerCysGlnProLeu 438
Db 1891 GAACCTGGATGTTCTCTTGATACACTTTCGCGGGCTTCTCTCCCAACAGAGCAT 1832
Qy 439 SerLeuLeuLeuGluHisLeuProLysLeuGln----- 449
Db 1831 CTCCTTGAGAGGAAACCTTTGATGATGATTAGATCCCATGCTTAAGAAATGTGAGCT 1772
Qy 450 -----ProArgProTyrSerCysAlaSerSerSerLeu----- 460
Db 1771 CTTTTCGATAGATATATCCCTATCTTATGCTGCTGACGCAAAAAACACCATTTGCTCAA 1712
Qy 461 ---PheHisProGly 464
Db 1711 AATTTCATCTGGGT 1697
```

RESULT 14

```
US-09-371-347A-47/c
; Sequence 47, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Rozen, Roy A,
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; PRIOR FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 47
; LENGTH: 2093
; TYPE: DNA
; ORGANISM: Homo sapiens
US-09-371-347A-47
```

Alignment Scores:

```
Pred. No.: 23.3 Length: 2093
Score: 49.00 Matches: 17
Percent Similarity: 37.88% Conservative: 8
Best Local Similarity: 25.76% Mismatches: 21
Query Match: 1.35% Indels: 20
Gaps: 2
```

us-09-371-347a-2 (1-698) x US-09-371-347A-47 (1-2093)

```
Qy 419 AspaLacysAlaCysLeuLeuAspLeuLeuAlaPheProSerCysGlnProLeu 438
Db 1890 GAACCTGGATGTTCTCTTGATACACTTTCGCGGGCTTCTCTCCCAACAGAGCAT 1831
Qy 439 SerLeuLeuLeuGluHisLeuProLysLeuGln----- 449
Db 1830 CTCCTTGAGAGGAAACCTTTGATGATGATTAGATCCCATGCTTAAGAAATGTGAGCT 1771
Qy 450 -----ProArgProTyrSerCysAlaSerSerSerLeu----- 460
Db 1770 CTTTTCGATAGATATATCCCTATCTTATGCTGCTGACGCAAAAAACACCATTTGCTC 1711
Qy 461 ---PheHisProGly 464
Db 1710 CAAATTTCCATCTGGGT 1693
```

RESULT 15

```
US-09-371-347A-14/c
; Sequence 14, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A,
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; PRIOR FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
```

```
; SEQ ID NO 14
; LENGTH: 25
; TYPE: DNA
; ORGANISM: Homo sapiens
US-09-371-347A-14

Alignment Scores:
Pred. No.: 0.885      Length: 25
Score: 47.00         Matches: 8
Percent Similarity: 100.00%  Conservative: 0
Best Local Similarity: 100.00%  Mismatches: 0
Query Match: 1.30%      Indels: 0
DB: 1                Gaps: 0

us-09-371-347a-2 (1-698) x US-09-371-347A-14 (1-25)

OY      246 ProProGluTYrLeuGlnValHis 253
Db      25 CCCCAGATATTATTAAGATCTACAT 2

RESULT 16
US-09-371-347A-50/c
; Sequence 50, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A.
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; TITLE OF INVENTION: DEFECTS, CARDIOVASCULAR DISEASE, AND CANCER
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371.347A
; CURRENT FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 50
; LENGTH: 26
; TYPE: DNA
; ORGANISM: Homo sapiens
US-09-371-347A-50

Alignment Scores:
Pred. No.: 1.04      Length: 26
Score: 46.00         Matches: 8
Percent Similarity: 100.00%  Conservative: 0
Best Local Similarity: 100.00%  Mismatches: 0
Query Match: 1.27%      Indels: 0
DB: 1                Gaps: 0

us-09-371-347a-2 (1-698) x US-09-371-347A-50 (1-26)

OY      29 HisGlyPheSerAlaAspLeuHis 36
Db      24 CATGATTTCTCGAGATCTTCAC 1

RESULT 17
US-09-371-347A-15/c
; Sequence 15, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A.
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; TITLE OF INVENTION: DEFECTS, CARDIOVASCULAR DISEASE, AND CANCER
```

```
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371.347A
; CURRENT FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 15
; LENGTH: 24
; TYPE: DNA
; ORGANISM: Homo sapiens
US-09-371-347A-15

Alignment Scores:
Pred. No.: 1.25      Length: 24
Score: 44.00         Matches: 8
Percent Similarity: 100.00%  Conservative: 0
Best Local Similarity: 100.00%  Mismatches: 0
Query Match: 1.21%      Indels: 0
DB: 1                Gaps: 0

us-09-371-347a-2 (1-698) x US-09-371-347A-15 (1-24)

OY      136 GluLeuValGluProTyrPile 143
Db      24 GAACCTGGTGGAGCCGTGATTT 1

RESULT 18
US-09-371-347A-12/c
; Sequence 12, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A.
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; TITLE OF INVENTION: DEFECTS, CARDIOVASCULAR DISEASE, AND CANCER
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371.347A
; CURRENT FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 12
; LENGTH: 23
; TYPE: DNA
; ORGANISM: Homo sapiens
US-09-371-347A-12

Alignment Scores:
Pred. No.: 1.36      Length: 23
Score: 43.00         Matches: 7
Percent Similarity: 100.00%  Conservative: 0
Best Local Similarity: 100.00%  Mismatches: 0
Query Match: 1.19%      Indels: 0
DB: 1                Gaps: 0

us-09-371-347a-2 (1-698) x US-09-371-347A-12 (1-23)

OY      450 ProArgProTyrSerCysAla 456
Db      23 CCGAGACCATATTCGTGTGCA 3

RESULT 19
US-09-371-347A-6
; Sequence 6, Application US/09371347A
```

```

; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A,
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; TITLE OF INVENTION: DEFECTS, CARDIOVASCULAR DISEASE, AND CANCER
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; PRIOR FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 6
; LENGTH: 26
; TYPE: DNA
; ORGANISM: Homo sapiens
US-09-371-347A-6

Alignment Scores:
Pred. No.: 1.51      Length: 26
Score: 43.00      Matches: 8
Percent Similarity: 100.00%      Conservative: 0
Best Local Similarity: 100.00%      Mismatches: 0
Query Match: 1.19%      Indels: 0
DB: 1      Gaps: 0

us-09-371-347a-2 (1-698) x US-09-371-347A-6 (1-26)

Qy 525 ArgThrThrAsnSerPheHisLeu 532
Db 1 CGAACACAAATCTTTCACACTTA 24

RESULT 20
US-09-371-347A-9
; Sequence 9, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A,
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; PRIOR FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 9
; LENGTH: 24
; TYPE: DNA
; ORGANISM: Homo sapiens
US-09-371-347A-9

Alignment Scores:
Pred. No.: 1.6      Length: 24
Score: 42.00      Matches: 8
Percent Similarity: 100.00%      Conservative: 0
Best Local Similarity: 100.00%      Mismatches: 0
Query Match: 1.16%      Indels: 0
DB: 1      Gaps: 0
```

```

us-09-371-347a-2 (1-698) x US-09-371-347A-9 (1-24)

Qy 555 PheLeuGlnHisArgGluTyrLeu 562
Db 1 TTCTTACACATAGAGAAATCTC 24

RESULT 21
US-09-371-347A-3
; Sequence 3, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A,
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; PRIOR FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 3
; LENGTH: 24
; TYPE: DNA
; ORGANISM: Homo sapiens
US-09-371-347A-3

Alignment Scores:
Pred. No.: 1.92      Length: 24
Score: 41.00      Matches: 8
Percent Similarity: 100.00%      Conservative: 0
Best Local Similarity: 100.00%      Mismatches: 0
Query Match: 1.13%      Indels: 0
DB: 1      Gaps: 0

us-09-371-347a-2 (1-698) x US-09-371-347A-3 (1-24)

Qy 440 LeuLeuGlnHisLeuProTyr 447
Db 1 CTCTGCTGACATCTTCTCTAA 24

RESULT 22
US-09-371-347A-10/c
; Sequence 10, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A,
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; PRIOR FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 10
; LENGTH: 24
; TYPE: DNA
; ORGANISM: Homo sapiens
US-09-371-347A-10
```



```

Alignment Scores:
Pred. No.: 1.82 Length: 24
Score: 41.00 Matches: 8
Percent Similarity: 100.00% Conservative: 0
Best Local Similarity: 100.00% Mismatches: 0
Query Match: 1.13% Indels: 0
DB: 1 Gaps: 0

us-09-371-347a-2 (1-698) x US-09-371-347a-10 (1-24)
QY 659 AspValHisAspAlaLeuValGln 666
Db 24 GATGACATGATGACCTTGTGCA 1

RESULT 23
US-09-371-347a-4/c
; Sequence 4, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A,
; APPLICANT: Rozen, Rima,
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; TITLE OF INVENTION: DEFECTS, CARDIOVASCULAR DISEASE, AND CANCER
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371.347A
; PRIOR FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 4
; LENGTH: 25
; TYPE: DNA
; ORGANISM: Homo sapiens
US-09-371-347a-4

Alignment Scores:
Pred. No.: 1.88 Length: 25
Score: 41.00 Matches: 7
Percent Similarity: 100.00% Conservative: 0
Best Local Similarity: 100.00% Mismatches: 0
Query Match: 1.13% Indels: 0
DB: 1 Gaps: 0

us-09-371-347a-2 (1-698) x US-09-371-347a-4 (1-25)
QY 582 HisLysAspArgAspTyrLeu 588
Db 23 CATAGATAGGATATCTA 3

RESULT 24
US-09-371-347a-17/c
; Sequence 17, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A,
; APPLICANT: Rozen, Rima,
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; TITLE OF INVENTION: DEFECTS, CARDIOVASCULAR DISEASE, AND CANCER
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371.347A
; PRIOR FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15

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; PRIOR APPLICATION NUMBER: 60/071,622
; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 17
; LENGTH: 23
; TYPE: DNA
; ORGANISM: Homo sapiens
US-09-371-347a-17

Alignment Scores:
Pred. No.: 1.99 Length: 23
Score: 40.00 Matches: 7
Percent Similarity: 100.00% Conservative: 0
Best Local Similarity: 100.00% Mismatches: 0
Query Match: 1.10% Indels: 0
DB: 1 Gaps: 0

us-09-371-347a-2 (1-698) x US-09-371-347a-17 (1-23)
QY 86 PheAlaHisLeuArgTyrGly 92
Db 23 TTGCTACCTGCGGTATGG 3

RESULT 25
US-09-371-347a-19
; Sequence 19, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A,
; APPLICANT: Rozen, Rima,
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; TITLE OF INVENTION: DEFECTS, CARDIOVASCULAR DISEASE, AND CANCER
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371.347A
; PRIOR FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 19
; LENGTH: 25
; TYPE: DNA
; ORGANISM: Homo sapiens
US-09-371-347a-19

Alignment Scores:
Pred. No.: 4.46 Length: 25
Score: 34.00 Matches: 7
Percent Similarity: 100.00% Conservative: 0
Best Local Similarity: 100.00% Mismatches: 0
Query Match: 0.94% Indels: 0
DB: 1 Gaps: 0

us-09-371-347a-2 (1-698) x US-09-371-347a-19 (1-25)
QY 113 LysArgLeuGlnGluLeuGly 119
Db 3 AAACGACTTCAAGAGCTTGA 23

RESULT 26
US-09-371-347a-5
; Sequence 5, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A,
; APPLICANT: Rozen, Rima,
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron

```

```
APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; TITLE OF INVENTION: DEFECTS, CARDIOVASCULAR DISEASE, AND CANCER
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; PRIOR FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 5
; LENGTH: 23
; TYPE: DNA
; ORGANISM: Homo sapiens
US-09-371-347A-5
```

```
Alignment Scores:
Pred. No.: 5.31 Length: 23
Score: 32.00 Matches: 7
Percent Similarity: 100.00% Conservative: 0
Best Local Similarity: 100.00% Mismatches: 0
Query Match: 0.88% Indels: 0
DB: 1 Gaps: 0
```

us-09-371-347a-2 (1-698) x US-09-371-347A-5 (1-23)

```
QY 516 LeuAlaProlylSerIle 522
Db 3 CTGGCTCTAGATATCCATC 23
```

RESULT 27

```
US-09-371-347A-13
; Sequence 13, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A.
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; PRIOR FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 13
; LENGTH: 23
; TYPE: DNA
; ORGANISM: Homo sapiens
US-09-371-347A-13
```

```
Alignment Scores:
Pred. No.: 5.31 Length: 23
Score: 32.00 Matches: 7
Percent Similarity: 100.00% Conservative: 0
Best Local Similarity: 100.00% Mismatches: 0
Query Match: 0.88% Indels: 0
DB: 1 Gaps: 0
```

us-09-371-347a-2 (1-698) x US-09-371-347A-13 (1-23)

```
QY 170 AlaserProlylaserLeuArg 176
Db 3 GCATCCTGATCTTGAGG 23
```

```
RESULT 28
US-09-371-347A-49
; Sequence 49, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A.
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; PRIOR FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 49
; LENGTH: 23
; TYPE: DNA
; ORGANISM: Homo sapiens
US-09-371-347A-49
```

```
Alignment Scores:
Pred. No.: 8.51 Length: 23
Score: 28.00 Matches: 6
Percent Similarity: 100.00% Conservative: 1
Best Local Similarity: 85.71% Mismatches: 0
Query Match: 0.77% Indels: 0
DB: 1 Gaps: 0
```

us-09-371-347a-2 (1-698) x US-09-371-347A-49 (1-23)

```
QY 15 AlAlysAlaIleAlaGluIu 21
Db 1 GCNAGGCCATCGAGAGAGAC 21
```

```
RESULT 29
US-09-371-347A-20/c
; Sequence 20, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A.
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; PRIOR FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 20
; LENGTH: 25
; TYPE: DNA
; ORGANISM: Homo sapiens
US-09-371-347A-20
```

```
Alignment Scores:
Pred. No.: 11.4 Length: 25
Score: 26.00 Matches: 6
Percent Similarity: 75.00% Conservative: 0
```

```
Best Local Similarity: 75.00%      Mismatches: 2
Query Match: 0.72%                Indels: 0
DB: 1                               Gaps: 0

us-09-371-347a-2 (1-698) x US-09-371-347A-20 (1-25)

QY      265 ValsevalThrsAlaAappRo 272
      ||||| ||||| ||||| |||||
      24 GTCAGCTTACTAGTGCACAAACT 1

RESULT 30
US-09-371-347A-49/C
; Sequence 49, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A,
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; TITLE OF INVENTION: DEFECTS, CARDIOVASCULAR DISEASE, AND CANCER
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; PRIOR FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 49
; LENGTH: 23
; TYPE: DNA
; ORGANISM: Homo sapiens
US-09-371-347A-49

Alignment Scores:
Pred. No.: 16.4      Length: 23
Score: 22.00         Matches: 3
Percent Similarity: 100.00%      Conservative: 1
Best Local Similarity: 75.00%      Mismatches: 0
Query Match: 0.61%      Indels: 0
DB: 1                Gaps: 0

us-09-371-347a-2 (1-698) x US-09-371-347A-49 (1-23)

QY      104 PheCysangly 107
      ||||| ||||| ||||| |||||
      18 TTCTGCATGCC 7

RESULT 31
US-09-371-347A-4
; Sequence 4, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A,
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; TITLE OF INVENTION: DEFECTS, CARDIOVASCULAR DISEASE, AND CANCER
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; PRIOR FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 4
```

```
; LENGTH: 25
; TYPE: DNA
; ORGANISM: Homo sapiens
US-09-371-347A-4

Alignment Scores:
Pred. No.: 17.4      Length: 25
Score: 22.00         Matches: 4
Percent Similarity: 100.00%      Conservative: 1
Best Local Similarity: 80.00%      Mismatches: 0
Query Match: 0.61%      Indels: 0
DB: 1                Gaps: 0

us-09-371-347a-2 (1-698) x US-09-371-347A-4 (1-25)

QY      538 IlleProlelleMet 542
      ||||| ||||| ||||| |||||
      9 ATCCCTACCTTATG 23

RESULT 32
US-09-371-347A-8
; Sequence 8, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A,
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; TITLE OF INVENTION: DEFECTS, CARDIOVASCULAR DISEASE, AND CANCER
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; PRIOR FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 8
; LENGTH: 25
; TYPE: DNA
; ORGANISM: Homo sapiens
US-09-371-347A-8

Alignment Scores:
Pred. No.: 17.4      Length: 25
Score: 22.00         Matches: 5
Percent Similarity: 71.43%      Conservative: 0
Best Local Similarity: 71.43%      Mismatches: 2
Query Match: 0.61%      Indels: 0
DB: 1                Gaps: 0

us-09-371-347a-2 (1-698) x US-09-371-347A-8 (1-25)

QY      318 ProAnSerAappSerGluVal 324
      ||||| ||||| ||||| |||||
      4 CCTTGAAGTGTGAGAGGTT 24

RESULT 33
US-09-371-347A-11/C
; Sequence 11, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A,
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; TITLE OF INVENTION: DEFECTS, CARDIOVASCULAR DISEASE, AND CANCER
; FILE REFERENCE: 50004/003003
```

```

; CURRENT APPLICATION NUMBER: US/09/371.347A
; CURRENT FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 11
; LENGTH: 25
; TYPE: DNA
; ORGANISM: Homo sapiens
US-09-371-347A-11

Alignment Scores:
Pred. No.: 17.4      Length: 25
Score: 22.00        Matches: 5
Percent Similarity: 71.43%  Conservative: 0
Best Local Similarity: 71.43%  Mismatches: 2
Query Match: 0.61%      Indels: 0
DB: 1                Gaps: 0

us-09-371-347a-2 (1-698) x US-09-371-347A-11 (1-25)

QY 318 ProAnSerApSergJuvAl 324
Db 22 CCTGAGAGTGTGAGAGGTT 2

RESULT 34
US-09-371-347A-13/c
; Sequence 13, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A.
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371.347A
; CURRENT FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 13
; LENGTH: 23
; TYPE: DNA
; ORGANISM: Homo sapiens
US-09-371-347A-13

Alignment Scores:
Pred. No.: 18.2      Length: 23
Score: 21.00        Matches: 3
Percent Similarity: 75.00%  Conservative: 0
Best Local Similarity: 75.00%  Mismatches: 1
Query Match: 0.58%      Indels: 0
DB: 1                Gaps: 0

us-09-371-347a-2 (1-698) x US-09-371-347A-13 (1-23)

QY 361 ProAlaGlyCys 364
Db 23 CCTCAGAGATGC 12

RESULT 35
US-09-371-347A-9/c
; Sequence 9, Application US/09371347A
; GENERAL INFORMATION:

```

```

; APPLICANT: Gravel, Roy A.
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371.347A
; CURRENT FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 5
; LENGTH: 23
; TYPE: DNA
; ORGANISM: Homo sapiens
US-09-371-347A-5

Alignment Scores:
Pred. No.: 22      Length: 23
Score: 19.00      Matches: 4
Percent Similarity: 100.00%  Conservative: 0
Best Local Similarity: 100.00%  Mismatches: 0
Query Match: 0.52%      Indels: 0
DB: 1                Gaps: 0

us-09-371-347a-2 (1-698) x US-09-371-347A-5 (1-23)

QY 312 AlaPheSerValIleCys 317
Db 23 AGTTTCCTCTATGCTGT 6

RESULT 36
US-09-371-347A-5/c
; Sequence 5, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A.
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371.347A
; CURRENT FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 5
; LENGTH: 23
; TYPE: DNA
; ORGANISM: Homo sapiens
US-09-371-347A-5

Alignment Scores:
Pred. No.: 20.6     Length: 24
Score: 20.00        Matches: 3
Percent Similarity: 83.33%  Conservative: 2
Best Local Similarity: 50.00%  Mismatches: 1
Query Match: 0.55%      Indels: 0
DB: 1                Gaps: 0

us-09-371-347a-2 (1-698) x US-09-371-347A-9 (1-24)

QY 312 AlaPheSerValIleCys 317
Db 23 AGTTTCCTCTATGCTGT 6

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Oy      118 LeuGLYAlaArg 121
Db      13 TTAGAGCCAGG 2

RESULT 37
US-09-371-347A-7/c
; Sequence 7, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A,
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; PRIOR FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 7
; LENGTH: 23
; TYPE: DNA
; ORGANISM: Homo sapiens
US-09-371-347A-7

Alignment Scores:
Pred. No.:      22      Length:      23
Score:          19.00   Matches:      3
Percent Similarity: 75.00% Conservative: 0
Best Local Similarity: 75.00% Mismatches: 1
Query Match:    0.52%  Indels:      0
DB:             1      Gaps:        0

US-09-371-347A-2 (1-698) x US-09-371-347A-7 (1-23)

Oy      530 PheHISLeuPro 533
Db      14 TTCACCACT 3

RESULT 38
US-09-371-347A-12
; Sequence 12, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A,
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; PRIOR FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 12
; LENGTH: 23
; TYPE: DNA
; ORGANISM: Homo sapiens
US-09-371-347A-12

```

```

Alignment Scores:
Pred. No.:      22      Length:      23
Score:          19.00   Matches:      3
Percent Similarity: 100.00% Conservative: 0
Best Local Similarity: 100.00% Mismatches: 0
Query Match:    0.52%  Indels:      0
DB:             1      Gaps:        0

US-09-371-347A-2 (1-698) x US-09-371-347A-12 (1-23)

Oy      696 IleTyrSer 698
Db      12 ATATGTCT 20

RESULT 39
US-09-371-347A-10
; Sequence 10, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A,
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; PRIOR FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 10
; LENGTH: 24
; TYPE: DNA
; ORGANISM: Homo sapiens
US-09-371-347A-10

Alignment Scores:
Pred. No.:      22.6     Length:      24
Score:          19.00   Matches:      5
Percent Similarity: 75.00% Conservative: 1
Best Local Similarity: 62.50% Mismatches: 1
Query Match:    0.52%  Indels:      1
DB:             1      Gaps:        0

US-09-371-347A-2 (1-698) x US-09-371-347A-10 (1-24)

Oy      484 LeuArgLysGlyVal-CysThr 490
Db      1 TTGCACAAGGCATCATGTATACA 22

RESULT 40
US-09-371-347A-15
; Sequence 15, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A,
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; PRIOR FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622

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; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 15
; LENGTH: 24
; TYPE: DNA
; ORGANISM: Homo sapiens
US-09-371-347A-15

Alignment Scores:
Pred. No.: 22.6      Length: 24
Score: 19.00      Matches: 3
Percent Similarity: 62.50%      Conservative: 2
Best Local Similarity: 37.50%      Mismatches: 3
Query Match: 0.52%      Indels: 0
DB: 1      Gaps: 0

us-09-371-347a-2 (1-698) x US-09-371-347A-15 (1-24)

OY 523 SerProArgThrThrAsnSerPhe 530
Db 1 AATCCAGCGCTCAACCAAGGCTC 24

RESULT 41
US-09-371-347A-50
; Sequence 50, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A,
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; TITLE OF INVENTION: DEFECTS, CARDIOVASCULAR DISEASE, AND CANCER
; FILE REFERENCE: 50004/003003
; CURRENT FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 50
; LENGTH: 26
; TYPE: DNA
; ORGANISM: Homo sapiens
US-09-371-347A-50

Alignment Scores:
Pred. No.: 23.8      Length: 26
Score: 19.00      Matches: 4
Percent Similarity: 71.43%      Conservative: 1
Best Local Similarity: 57.14%      Mismatches: 2
Query Match: 0.52%      Indels: 0
DB: 1      Gaps: 0

us-09-371-347a-2 (1-698) x US-09-371-347A-50 (1-26)

OY 560 GluLysLeuGlnGlnHis 566
Db 3 GAAGATCTGCAGAAATCCAT 23

RESULT 42
US-09-371-347A-8/c
; Sequence 8, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A,
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David

```

```

; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; TITLE OF INVENTION: DEFECTS, CARDIOVASCULAR DISEASE, AND CANCER
; FILE REFERENCE: 50004/003003
; CURRENT FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 8
; LENGTH: 25
; TYPE: DNA
; ORGANISM: Homo sapiens
US-09-371-347A-8

Alignment Scores:
Pred. No.: 25.3      Length: 25
Score: 18.00      Matches: 3
Percent Similarity: 50.00%      Conservative: 0
Best Local Similarity: 50.00%      Mismatches: 3
Query Match: 0.50%      Indels: 0
DB: 1      Gaps: 0

us-09-371-347a-2 (1-698) x US-09-371-347A-8 (1-25)

OY 357 ProGlnHisIleProAla 362
Db 19 CCTCATCACTTCAAGGCA 2

RESULT 43
US-09-371-347A-11
; Sequence 11, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A,
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; TITLE OF INVENTION: DEFECTS, CARDIOVASCULAR DISEASE, AND CANCER
; FILE REFERENCE: 50004/003003
; CURRENT FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 11
; LENGTH: 25
; TYPE: DNA
; ORGANISM: Homo sapiens
US-09-371-347A-11

Alignment Scores:
Pred. No.: 25.3      Length: 25
Score: 18.00      Matches: 3
Percent Similarity: 50.00%      Conservative: 0
Best Local Similarity: 50.00%      Mismatches: 3
Query Match: 0.50%      Indels: 0
DB: 1      Gaps: 0

us-09-371-347a-2 (1-698) x US-09-371-347A-11 (1-25)

OY 357 ProGlnHisIleProAla 362
Db 7 CCTCATCACTTCAAGGCA 24

```

```
RESULT 44
US-09-371-347A-14
; Sequence 14, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A,
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; PRIOR FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FASTSEQ for Windows Version 4.0
; SEQ ID NO 14
; LENGTH: 25
; TYPE: DNA
; ORGANISM: Homo sapiens
US-09-371-347A-14

Alignment Scores:
Pred. No.: 25.3      Length: 25
Score: 18.00      Matches: 2
Percent Similarity: 66.67%      Conservative: 0
Best Local Similarity: 66.67%      Mismatches: 1
Query Match: 0.50%      Indels: 0
DB: 1      Gaps: 0

us-09-371-347a-2 (1-698) x US-09-371-347A-14 (1-25)

QY 421 CysAlaCys 423
DB 3 TGTACTGT 11

RESULT 45
US-09-371-347A-7
; Sequence 7, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A,
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; PRIOR FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FASTSEQ for Windows Version 4.0
; SEQ ID NO 7
; LENGTH: 23
; TYPE: DNA
; ORGANISM: Homo sapiens
US-09-371-347A-7

Alignment Scores:
Pred. No.: 26.3      Length: 23
Score: 17.00      Matches: 2
Percent Similarity: 100.00%      Conservative: 0
Best Local Similarity: 100.00%      Mismatches: 0
```

```
Query Match: 0.47%      Indels: 0
DB: 1      Gaps: 0

us-09-371-347a-2 (1-698) x US-09-371-347A-7 (1-23)

QY 491 GLYTrp 492
DB 4 GGTGG 9

Search completed: May 9, 2005, 15:35:49
Job time : 38 secs
```

Inis Page Blank (uspto)

GenCore version 5.1.6
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OM nucleic - protein search, using frame_n2p model

Run on: May 9, 2005, 15:28:59 ; Search time 5 Seconds
(without alignments)
5.055 Million cell updates/sec

Title: us-09-371-347A-1

Perfect score: 3768
Sequence: 1 atgagagaggttcctgcttact.....cttcagatattggtcattaa 2097

Scoring table:

BLSDUM62
Xgapop 10.0 , Xgapext 0.5
Ygapop 10.0 , Ygapext 0.5
Rgapop 6.0 , Rgapext 7.0
Delop 6.0 , Delext 7.0

Searched: 34 segs, 6026 residues

Total number of hits satisfying chosen parameters: 68

Minimum DB seq length: 0

Maximum DB seq length: 2000000000

Post-processing: Minimum Match 0%

Maximum Match 100%

Listing first 45 summaries

Command line parameters:

-MODEL=frame+np.model -DEV=soft -Q=us-09-371-347A-1 -DB=US09371347A.pep
-SUFFIX=ptc -OUT=align1 -MINMATCH=0.1 -LOOPCL=0 -LOOPEXT=0 -UNITS=bits
-START=1 -END=1 -MATRIX=blomsum62 -TRANS=human40.cdi -LIST=45 -DOCALIGN=200
-THR SCORE=ptc -THR MAX=100 -THR MIN=0 -ALIGN=45 -MODE=LOCAL -OUTFMT=ptc
-NORM=ext -HEADSIZE=500 -MINLEN=0 -MAXLEN=2000000000 -NCPU=6 -NO_XLXLY
-NEG_SCORES=0 -LONGLOG -THREADS=1 -XGAPOP=10 -XGAPEXT=0.5 -FGAPOP=6 -FGAPEXT=7
-YGAPOP=10 -YGAPEXT=0.5 -DELOP=6 -DELEXT=7

Database : US09371347A.pep:*

Pred. No. is the number of results predicted by chance to have a
score greater than or equal to the score of the result being printed,
and is derived by analysis of the total score distribution.

SUMMARIES

Result No.	Score	Query Match	Length	ID	Description
1	3624	96.2	698	1	US-09-371-347A-2
2	3624	96.2	698	1	US-09-371-347A-21
3	3620	96.1	698	1	US-09-371-347A-42
4	3614	95.9	698	1	US-09-371-347A-44
5	3609.5	95.8	697	1	US-09-371-347A-46
6	3481	92.4	689	1	US-09-371-347A-48
7	914	24.3	682	1	US-09-371-347A-23
8	731.5	19.4	677	1	US-09-371-347A-60
9	215	5.7	41	1	US-09-371-347A-54
10	158	4.2	29	1	US-09-371-347A-58
11	117	3.1	22	1	US-09-371-347A-53
12	116	3.1	23	1	US-09-371-347A-55
13	109	2.9	18	1	US-09-371-347A-25
14	104	2.8	19	1	US-09-371-347A-52
15	100	2.7	20	1	US-09-371-347A-57
16	87	2.3	17	1	US-09-371-347A-57
17	68	1.8	14	1	US-09-371-347A-56
18	61.5	1.6	682	1	US-09-371-347A-22
19	61	1.6	18	1	US-09-371-347A-35
20	61	1.6	18	1	US-09-371-347A-35
21	58	1.5	18	1	US-09-371-347A-26

22	58	1.5	18	1	US-09-371-347A-30	Sequence 30, App1
23	57	1.5	18	1	US-09-371-347A-38	Sequence 38, App1
24	55	1.5	18	1	US-09-371-347A-32	Sequence 32, App1
25	54	1.4	18	1	US-09-371-347A-29	Sequence 29, App1
26	53	1.4	18	1	US-09-371-347A-28	Sequence 28, App1
27	51	1.4	9	1	US-09-371-347A-61	Sequence 61, App1
28	51	1.4	18	1	US-09-371-347A-36	Sequence 36, App1
29	51	1.4	18	1	US-09-371-347A-37	Sequence 37, App1
30	51	1.4	18	1	US-09-371-347A-48	Sequence 48, App1
31	50	1.3	697	1	US-09-371-347A-46	Sequence 46, App1
32	50	1.3	698	1	US-09-371-347A-2	Sequence 2, App1
33	50	1.3	698	1	US-09-371-347A-21	Sequence 21, App1
34	50	1.3	698	1	US-09-371-347A-42	Sequence 42, App1
35	50	1.3	698	1	US-09-371-347A-44	Sequence 44, App1
36	49	1.3	18	1	US-09-371-347A-27	Sequence 27, App1
37	49	1.3	677	1	US-09-371-347A-23	Sequence 23, App1
38	42	1.1	18	1	US-09-371-347A-33	Sequence 33, App1
39	40	1.1	18	1	US-09-371-347A-31	Sequence 31, App1
40	34.5	0.9	19	1	US-09-371-347A-55	Sequence 55, App1
41	34	0.9	19	1	US-09-371-347A-39	Sequence 39, App1
42	31	0.8	18	1	US-09-371-347A-40	Sequence 40, App1
43	30	0.8	18	1	US-09-371-347A-36	Sequence 36, App1
44	29	0.8	6	1	US-09-371-347A-59	Sequence 59, App1
45	29	0.8	22	1	US-09-371-347A-58	Sequence 58, App1

ALIGNMENTS

RESULT 1
US-09-371-347A-2
; Sequence 2, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A.
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; TITLE OF INVENTION: DEFECTS, CARDIOVASCULAR DISEASE, AND CANCER
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; CURRENT FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 2
; LENGTH: 698
; TYPE: PRT
; ORGANISM: Homo sapiens
US-09-371-347A-2
Alignment Scores:
Pred. No.: 9.59e-67 Length: 698
Score: 3624.00 Matches: 698
Percent Similarity: 100.00% Conserves: 0
Best Local Similarity: 100.00% Mismatches: 0
Query Match: 96.18% Indels: 0
Gaps: 0
DB: 1
us-09-371-347A-1 (1-2097) x US-09-371-347A-2 (1-698)
QY 1 ATGAGAGGTTCTGTACTATATGTCACAGCAGGAGCAGGCAAGCCATGACAGAA 60
DB 1 MetcrrgrgrphreuleuleutyralaThrglndnglgylnalalyaIalalaglu 20
QY 61 GAAATGCTGAGCAAGCTGCTGTCATGATTTCTGCAATCTTCACTGTATTAGTGA 120
DB 21 GlutecySglnGlnalalvalaIhieglyPheserzlaaspreuhtiscySileserclu 40

```

QY 121 TCCGATAGATGACCTTAAAAACGAAACAGCTCTCTGTGTGTGTGTCTTACGACG 180
DB 41 SeraspysrtyrAspLeuLysThrGluThrAlaProLeuValValValSerThrThr 60
QY 181 GGCACCGGAGACCCACCCGACACAGCCCGCAAGTTGTTAAGAAATACAGAACCAACA 240
DB 61 GlyThrGlyAspProProAspThrAlaArgLysPheValLysGluLeuGlnAspGlnThr 80
QY 241 CTGCGCGGTGATTTCTTGTGCTACCTGGGTATGGGTATGAGGCTCGGATTTCAAGAA 300
DB 81 LeuProValAspPhePheAlaHisLeuArgTyrGlyLeuLeuGlyLeuGlyAspSerGlu 100
QY 301 TACACCTTACTTTGCAATGGGGGGAAGATTAATGATAACGACTTCAAGACTTGAGCC 360
DB 101 TyrThrTyrPheCysAsnGlyGlyLysIleIleAspLysArgLeuGlnGluLeuGlyAla 120
QY 361 CCGGATTTCTATGACACTGGACATGACAGATGACTGTGTAGTTTGAACCTTGTGTGAG 420
DB 121 ArgHisPheTyrAspThrGlyHisAlaAspAspCysValGlyLeuGluLeuValGlu 140
QY 421 CCGTGGATTTGCTGGACTGTGGCAAGCCCTCAGAAAGACTTTTAGGTCAAGACGAGACA 480
DB 141 ProThrIleAlaGlyLeuThrProAlaLeuArgLysHisPheArgSerArgGlyGln 160
QY 481 GAGAGATAGTGGCGCACTCCGGTGGCATCACCTGCATCTTGAGAGACAGACTTGTG 540
DB 161 GluGluIleSerGlyAlaLeuProValAlaSerProAlaSerLeuArgThrAspLeuVal 180
QY 541 AAGTCAGAGCTGCTACACATTTGAATTTCAAGTCCAGCTTTCGAAATTCGATGATTCAGA 600
DB 181 LysSerGluLeuLeuHisIleGluSerGluValGluLeuLeuArgPheAspSerGly 200
QY 601 AGAAGAGATTCTGAGTTTGAACAAATGCACTGAAACAGCAACCAATCCAAATGTTGTA 660
DB 201 ArgLysAspSerGluValLeuLysGlnAsnAlaValAsnSerArgGlnSerValVal 220
QY 661 ATTGAAGACTTTGAGTCTCACTTACCCGTTGGTACCCCACTCTCAACAGCTCTGTG 720
DB 221 IleGluAspPheGlnSerLeuThrArgSerValProProLeuSerGlnAlaSerLeu 240
QY 721 AATTCCTGCTTAAACCCCAAGATATTTCAGGTATACGTGACGAGAGCTCTTGGGACG 780
DB 241 AsnIleProGlyLeuProProGluTyrLeuGlnValHisLeuGlnGlnSerLeuGlyGln 260
QY 781 GAGGAAAGCCAAAGTATCTGACTTTCAGCAGATCCAGTTTTCAGTGCCCAATTTCAAG 840
DB 261 GluIleSerGlnValSerValThrSerAlaAspProValPheGlnValProIleSerLys 280
QY 841 GCAGTTCACTTACTACGATGATGCGATTAATAACCACTGTGTGTAGAAATGGACATT 900
DB 281 AlaValGlnLeuThrThrAsnAspAlaIleLysThrThrLeuLeuValGluLeuAspIle 300
QY 901 TCAAAATCAGACTTTCTTCACTCAGCTGAGATGCTTCAAGCGTGAATCCCTCAAGT 960
DB 301 SerAsnThrAspPheSerTyrGlnProGlyAspAlaPheSerValIleCysProAsnSer 320
QY 961 GATTTCGAGTACAAAGCTTCTCAAAAGACTGACGCTTGAAGATTAATAAGAGCACTGC 1020
DB 321 AspSerGluValGlnSerLeuLeuGlnArgLeuGlnLeuGlnAspLysValGlyGlnHisCys 340
QY 1021 GTCTTTGAAAATAAAGGACACACAAAGAAAGAGAGCTTACCCCAAGCATATA 1080
DB 341 ValLeuLeuLysIleLysAlaAspThrLysLysLysGlyAlaThrLeuProGlnHisIle 360
QY 1081 CCGCGGGAGTGTCTCCAGTTCACTTTTACCGGTGTCTTGAATAACGAGCAATTCCT 1140
DB 361 ProIleAlaLysSerLeuGlnPheIlePheThrTyrPheLysGluIleArgAlaIlePro 380
QY 1141 AAAAAGCATTTTTCGAGCCCTTGTGACTATATCAGTACAGTACAGTGTGAAAAGCGAG 1200
DB 381 LysLysAlaPheLeuArgAlaLeuValAspLysThrSerAspSerAlaGlyLysValArg 400
QY 1201 CTACAGAGAGCTGTGCACTTAAACAAAGGGGACGCGATTAATAGCCGCTTTGTACAGATGCC 1260

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DB 401 LeuGlnIleLeuCysSerLysGlnGlyAlaAlaAspLysSerArgPheValArgAspAla 420
QY 1261 TGTGCTGCTGTTTGGATCTCTCTCTGCTTCCCTTCTTGGCCAGCCACATCTAGTCTC 1320
DB 421 CysAlaCysLeuLeuAspLeuLeuAlaPheProSerCysGlnProProLeuSerLeu 440
QY 1321 CTGCTGCAACATCTTCTTAACCTTCAACCCGAGACCAATTCGATGCACTCAAGTTTA 1380
DB 441 LeuLeuGlnHisLeuProLysLeuGlnProArgProLysSerCysAlaAspSerSerLeu 460
QY 1381 TTTCACCCAGAAAGCTCCATTTTGTCTTCAACATTCGTGAATTTCTGTACTGCCACA 1440
DB 461 PheHisProGlyLysLeuHisPheValPheAsnIleValGluPheLeuSerThrAlaThr 480
QY 1441 ACAGAGTTCTGGCGGAAGGAGATATGACAGCTGCTGCTGCTGCTGCTGCTGCTGCTG 1500
DB 481 ThrGluValLeuArgLysGlyValCysThrGlyTyrPheValLeuLeuValAlaSerVal 500
QY 1501 CTTACGCAACATACATGATGCCATGAGACAGCGGGAAAGCCCTGGCTCTTAAGATA 1560
DB 501 LeuGlnProAsnIleHisAlaSerHisGluAspSerClyLysAlaLeuAlaProLysIle 520
QY 1561 TCCATCTCTCTGCAACACAAATTTCTTCCACTTACACAGATGACCCCTGAATCCCATC 1620
DB 521 SerIleSerProArgThrThrAsnSerPheHisLeuProAspAspProSerIleProIle 540
QY 1621 AATAAGTGGGTCCAGGAACCGGCATGACCCCTTATTTGGGCTTCTTCAACATAGAG 1680
DB 541 IleMetValGlyProGlyThrGlyThrGlyIleAlaProPheIleGlyPheLeuGlnHisValGlyGln 560
QY 1681 AAATCCCAAGAAACACACCCAGATGGAATTTTGGAGCAATGAGTGTGTTTGTGGCTGC 1740
DB 561 LysLeuGlnGluGlnHisProAspGlyAsnPheGlyAlaMetCysThrPhePheArgCys 580
QY 1741 AGCGATAGAGATAGGATTAATCTATTTCAGAAAGCTCAGACATTTCTTAAAGCATGG 1800
DB 581 ArgHisLysAspArgAspTyrLeuPheArgGlyGluLeuArgHisPheLeuLysHisGly 600
QY 1801 ATCTTAACATCTTAAAGTTTCTCTTCAAGAGATGCTCTGTGGGAGGAGGAAAGCC 1860
DB 601 IleLeuThrHisLeuLysValSerPheSerArgAspAlaProValGlyGlnGluGlnAla 620
QY 1861 CCAGCAAGTATGTACAGACACATCCAGCTTCAAGGCGCCAGCGGTGGCGAATCTCTC 1920
DB 621 ProAlaLysTyrAlaGlnAspAsnIleGlnLeuHisGlyGlnIleValAlaArgIleLeu 640
QY 1921 CTCGAGGAGAACCGCATATTATGTGTGTGAGATGCAAGAAATGGCCAAAGATGTA 1980
DB 641 LeuGlnGluAsnGlyHisIleTyrValCysGlyAspAlaLysAsnMetAlaLysAspVal 660
QY 1981 CATGATGCCCTTGGCAATTAATTAAGCAAAAGAGTTGAGTTGAAAATCAGAAAGCAATG 2040
DB 2041 AAAACCTGGCCACTTAAAGAAAGAAAGAAAGCTTACAGGATTAATTTGTGTA 2094
DB 681 LysThrLeuAlaThrLeuLysGlnGlyLysArgTyrLeuGlnAspIleThrSer 698

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RESULT 2

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US-09-371-347A-21
; Sequence 21, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A,
; APPLICANT: Rozen, Rima,
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; TITLE OF INVENTION: DEFECTS, CARDIOVASCULAR DISEASE, AND CANCER
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A

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OY 1861 CCAGCAAGTATGTACAGAGCAACATCCAGCTTCAGGCGACGAGGTGGCGAGATCTTC 1920
Db 621 ProAlaIstYrValGlnAspAsnIleGlnLeuHisGlyGlnGlnValAlaArgGlnLeu 640
OY 1921 CTCGAGGAGAACGGCCATATTTATGTGTGTGAGATGCAAAAGATATGCGCAGATGTA 1980
Db 641 LeuGlnGlnAsnGlnHisIleIleValCysGlnAspAlaIysAsnMetAlaIysAspVal 660
OY 1981 CATATGCGCTTGTGCAATAATATAGCAAGAGTTGAGTTGAAAACTGAAGCATG 2040
Db 661 HispAlaIleValGlnIleIleSerIysGlnValGlnValGlnLysLeuGlnAlaMet 680
OY 2041 AAAACCCCTGGCCACTTTAAAGAGAAAGCCTTCACTTCAGATATTGGTCA 2094
Db 681 LysThrIleuAlaIleThrIleuLysGlnGlnLysArgIleuGlnAspIleIleTrpSer 698

RESULT 3
US-09-371-347A-42
; Sequence 42, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A.
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE.
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; TITLE OF INVENTION: DEFECTS, CARDIOVASCULAR DISEASE, AND CANCER
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; PRIOR FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 42
; LENGTH: 698
; TYPE: PRF
; ORGANISM: Homo sapiens
US-09-371-347A-42

Alignment Scores:
Pred. No.: 1,14e-66 Length: 698
Score: 3620.00 Matches: 697
Percent Similarity: 100.00% Conservative: 1
Best Local Similarity: 99.86% Mismatches: 0
Query Match: 96.07% Indels: 0
Gaps: 0
DB: 1

us-09-371-347a-1 (1-2097) x US-09-371-347A-42 (1-698)
OY 1 ATGAGAGAGTTTCTGTATCTATATGCTACACAGAGGAGGAGGAAAGCCATCGAGAA 60
Db 1 MetArgAlrGpHeuLeuLeuIleuIleAlaThrGlnGlnGlnGlnAlaIleAlaGln 20
OY 61 GAATGTGTAGCAAGGCTGTGTACATGAGATTTCTGAGATCTTCACCTGATATAGGAA 120
Db 21 GlnIleCysGlnGlnAlaValAlaHisGlyPheSerAlaAspLeuHisCysIleSerGln 40
OY 121 TCCGATAGATGACCTTAAACCGAAACAGCTCTCTGTGTGTGTGTGTCTACACAG 180
Db 41 SerAspIysTrpAspLeuLysThrGlnThrAlaProIleuValAlaValaSerThrThr 60
OY 181 GGCACCGGAGACCCACCGACACAGCCGCGAAGTTTGTAAAGAAATPACAGAACAAACA 240
Db 61 GlyThrAlaLysProAspThrAlaArgLysPheValIleGlnIleAsnGlnThr 80
OY 241 CTGCGGATGATTTCTTGTGCACTGCGGATAGGGTACTCGGATTCGATTCAGAA 300
Db 81 LeuProValAspPhePheAlaHisLeuArgIleIleuArgLysLeuGlnLysAspSerGln 100
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OY 301 TACACTACTTTTTCATGGGGGGAGATATATGATTAACGACTTCAGAGCTTGGAGCC 360
Db 101 TyrThrTrpPheCysAsnGlyGlyLysIleIleAspLysArgLeuGlnGlnIleGlyAla 120
OY 361 CGGATTTCTATGACACTGACATGACATGACTGTGTAGATTGAACTTGTGTGTGAG 420
Db 121 ArgHisPheTrpAspThrGlnHisAlaIleAspAspCysValGlyLeuGlnLeuValGln 140
OY 421 CCGTGATTTGTGACCTCTGGCCAGCCCTCAGAAAGCATTTTATAGTAAAGAGACAA 480
Db 141 ProTrpIleAlaGlyLeuTrpProAlaIleuArgHisAspHeArgSerSerArgGlyGln 160
OY 481 GAGGAGATTAAGTGGCGGACCTCCGGGCAATCACTTCATCTTGAAGACAGACCTTGTG 540
Db 161 GlnGlnIleSerGlnAlaIleuProValAlaSerProAlaSerLeuAsnArgIleAspLeuVal 180
OY 541 AAGTCAGAGCTGTACACATTTGAATCTCAAGTCGAGCTTCTGATTCGATGATTCAGGA 600
Db 181 LysSerGlnLeuLeuHisIleGlnSerGlnValGlnLeuLeuArgPheAspAspSerGly 200
OY 601 AGAAGGATTTCTGAGGTTTGAAGCAAAATGCGTGAACGCAACCAATCCATGTTGTA 660
Db 201 ArgLysAspSerGlnValIleuLysGlnAsnAlaValAsnSerAsnGlnSerAsnValVal 220
OY 661 ATTGAAGACTTTGAGTCCCTCACTTACCCGTTGCGTACCCCACTTCACAGGCTCTGTG 720
Db 221 IleGlnAspPheGlnSerIleuThrArgSerValProProLeuSerGlnAlaSerLeu 240
OY 721 AATATTCCTGTGTTATCCCGCAGATATTTTACAGTACATCTGACGAGAGTCTTGGCCAG 780
Db 241 AsnIleProGlyLeuProProGlnIleuValHisIleuGlnIleuSerLeuGln 260
OY 781 GAGGAAAGCCAAATGATGTCATTTGACGAGATCCAGTTTGAATGTCGCAATTTCAAG 840
Db 261 GlnGlnSerGlnValSerValIleuSerAlaAspProValPheGlnValProIleSerLys 280
OY 841 GCAGTTCACTTACTACGAATGATGCAATGATGCAATGATGCAATGATGCAATGATGCAAT 900
Db 281 AlaValGlnIleuThrThrAsnAspAlaIleIleThrIleuLeuValGlnLeuAspIle 300
OY 901 TCAATACAGACTTTTCTATACGCTTGAGATGCTTCAGCGTATCTGCCCTAACAGT 960
Db 301 SerAsnThrAspPheSerTrpGlnProGlnLysAspAlaPheSerValIleCysProAsnSer 320
OY 961 GATTTGAGGTACAAAGCCCTCCCAAGACCTGACCTTGAATTAAGTAAGAGGACCTGC 1020
Db 321 AspSerGlnValGlnSerIleuLeuGlnArgLeuGlnIleuGlnAspLysArgGlnHisCys 340
OY 1021 GTCCCTTTGAAATTAAGGACGACACACAAAGAAAGAGACTTACCCCGACATATG 1080
Db 341 ValLeuLeuLysIleLysAlaAspThrIleLysGlyAlaIleThrLeuProGlnHisIle 360
OY 1081 CTGCGGAGATGTTCTCTCAATTTTAACTGTGTCTTGAATTCGAGCAATTCCT 1140
Db 361 ProAlaGlyCysSerLeuGlnPheIlePheThrTrpCysLeuGlnIleArgAlaIlePro 380
OY 1141 AAAAGGCAATTTTGGAGAGCCCTTGGACTATACAGAGACAGTCTGAAAAAGCCACAG 1200
Db 381 LysLysAlaPheLeuArgAlaLeuValAspTrpThrSerAspSerAlaGlnLysAspArg 400
OY 1201 CTACAGAGCTGTGACGATTAACAGAGGAGCGACGATTAATACCGCTTGTAGCAGATGCC 1260
Db 401 LeuGlnGlnLeuCysSerIysGlnGlnAlaAlaAspTrpSerArgPheValAlaArgAspAla 420
OY 1261 TGTGCTGCTGTGGATCTCTCTCGCTTTCCTTCTTCCAGGACCACTCACTGCTC 1320
Db 421 CysAlaCysLeuLeuAspLeuLeuAlaPheProSerCysGlnProProLeuSerLeu 440
OY 1321 CTGCTGGAACATCTTCTTAACTTCAACCGACGACATATTCGAGGACGACGCTCAAGTTTA 1380
Db 441 LeuLeuGlnIleHisLeuProLysLeuGlnProArgProLysSerCysAlaSerSerLeu 460
```

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QY 1361 TTTCACCGAGAAAGTCCATTTTGTCTTCAACATTTGAGATTTTGTCTTACGCGACA 1440
    |||
Db 461 PheHsPFGIyLyIsLeuHsIsPheValPheAsnIleValGIuPheLeuSerThrIaThr 480
QY 1441 ACAGAGGTTCTGCGAGAGGAGATGTAACAGCTGCGCTGCGCTTGTGGTGTCTTCAATT 1500
    |||
Db 481 ThrGIuValLeuArgLyGIuValCySerThrGIyTrPLeuAlaLeuLeuValAlaSerVal 500
QY 1501 CTTGAGCCCAACATTCATGACATCCCATAGACACAGCGGGAAAGCCCTGCTCTTAAGTA 1560
    |||
Db 501 LeuGIuPFGAsnIleHsIaIsSerHsGIuAsPSeGIyLyValAlaLeuAlaProLyIle 520
QY 1561 TCCATCTCTCCGCAACAACAATCTTCCACTTACAGATGACCCCTCAATCCCATC 1620
    |||
Db 521 SerIleSerProArgThrThrAsnSerPheHsIleuProAspPProSerIleProIle 540
QY 1621 ATAATGTGGGTCCAGAAACCGGCAATGACCCCGTTTATGGTGTCTTCAACATAGAG 1680
    |||
Db 541 IleMetValGIyProGIyThrGIyIleAlaProPheIleGIyPheLeuGIuHsIArgGIu 560
QY 1681 AAATCCCAAGAAACAACCCAGATGGAATTTGGAGAAATGAGATGTGTTTTGGCTGC 1740
    |||
Db 561 LysLeuGIuGIuGIuHsIProAspGIyAsnPheGIyAlaMetTrPLeuPheHsGIyCys 580
QY 1741 AGCATTAAGATAGGATTTATCTATTCTAGAAAAGAGTCAGACATTTCTTAAGCATGG 1800
    |||
Db 581 ArgHsIyAsPAspArgPTrPLeuPheArgLySGIuLeuArgHsIlePheLeuLyHsIleGI 600
QY 1801 ATCTTAATCATCTTAAGGTTTCTTCTCAAGAGATGCTCTGTGGGAGAGAGAGCC 1860
    |||
Db 601 IleLeuThrHsIleuLyValIsSerPheSerArgAspAlaProValGIyGIuGIuAla 620
QY 1861 CCAGAAAGTATGTACAGACAAACATCCAGCTTCAATGCGCCAGAGTGGCGAGATCTC 1920
    |||
Db 621 ProAlaLyStryValGIuAsPAsnIleGIuHsIleGIyGIuGIuAlaAlaArgIleLeu 640
QY 1921 CTCAGAGAAACGCGCATTTATTTATGTGTGTGAGATGCAAGATATATGCGCAAGATGA 1980
    |||
Db 641 LeuGIuGIuHsGIuHsIleIeTrValIySGIyAsPAlaLyAsnMetAlaLyAsPAla 660
QY 1981 CATGATGCTTGTGCAATAATATAGCAAGAGGTTGAGTTGAAAATGAAAGCAATG 2040
    |||
Db 661 HisAspAlaLeuValGIuIleIeSerLySGIuValGIyValGIuLyLeuGIuAlaMet 680
QY 2041 AAAACCTGGCCCACTTTAAAGAAAGAAAGCGCTACCTTCAGATATTTGGTCA 2094
    |||
Db 681 LysThrLeuAlaThrLeuLySGIuGIuLySArgTrPLeuGIuAsPTrIeTrPser 698

RESULT 4
US-09-371-347A-44
: Sequence 44, Application US/09371347A
: GENERAL INFORMATION:
: APPLICANT: Gravel, Roy A,
: APPLICANT: Rozen, Rima
: APPLICANT: Leclerc, Daniel
: APPLICANT: Wilson, Aaron
: APPLICANT: Rosenblatt, David
: TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
: TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
: FILE REFERENCE: 50004/003003
: CURRENT APPLICATION NUMBER: US/09/371,347A
: CURRENT FILING DATE: 1999-08-10
: PRIOR APPLICATION NUMBER: 09/232,028
: PRIOR FILING DATE: 1999-01-15
: PRIOR APPLICATION NUMBER: 60/071,622
: PRIOR FILING DATE: 1998-01-16
: NUMBER OF SEQ ID NOS: 61
: SOFTWARE: FastSeq for Windows Version 4.0
: SEQ ID NO 44
: LENGTH: 698
: TYPE: PRT
: ORGANISM: Homo sapiens
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US-09-371-347A-44
Alignment Scores:
Pred. No.: 1,47e-66 Length: 698
Score: 3614.00 Matches: 697
Percent Similarity: 99.86% Conservative: 0
Best Local Similarity: 99.86% Mismatches: 1
Query Match: 95.91% Indels: 0
DB: 1 Gaps: 0

us-09-371-347a-1 (1-2097) x US-09-371-347A-44 (1-698)
QY 1 ATGAGAGGTTTCTGTTACTATATAGCTACAGAGGAGGAGAAAGCCATCGCAGAA 60
    |||
Db 1 MetArgAspPheLeuLeuLeuTrPAlaThrGIuGIuGIuAlaLyAlaIleAlaGIu 20
QY 61 GAAATGTGTAGCAAGCTGTGTGATCATGATTTTCTGCAATCTTCACTGTATTTAGTA 120
    |||
Db 21 GluMetCysGIuGIuAlaValAlaHsIleGIyPheSerAlaAspLeuHsIleThrIleSerGIu 40
QY 121 TCCGATTAAGTATGACCTTAATAACCGAAASAGCTCTGTGTTGTGGTGTCTTACACAG 180
    |||
Db 41 SerAspLyStryAspLeuLySerThrGIuThrAlaProLeuValValValaValSerThrThr 60
QY 181 GGCACCGGAGACCCAGCCGACACAGCCGCAAGTTTGTGAAGAAATACAGAACCAACA 240
    |||
Db 61 GIyThrGIyAsPProPFGAsnIleGIyValIleLeuAspLySGIuLeuValLySGIuIleGIuAsnGIuThr 80
QY 241 CTGCGGTTGATTTTCTTGTCTACCTCGGTATGAGGTTTACTGGGTTCTGCGTATTCAGAA 300
    |||
Db 81 LeuProValaAspPhePheAlaHsIleuValArgLyGIuLeuGIuLyLeuGIyAspSerGIu 100
QY 301 TACACCTACTTTTGCATATGGGGGAGAGATATGTATTAAGACATTCAGAGCTTGGAGCC 360
    |||
Db 101 TyrThrTrpPheCysAsnGIyGIyLySleIleLeuAspLySGIuGIuGIuVala 120
QY 361 CGCATTTCTATGACACTGACATGACATGACATGACATGATGATGATTTTGAACCTTGGTGTAG 420
    |||
Db 121 ArgHsIlePheTrpAspThrGIuHsIleAlaAspAspCysValaGIyLeuGIuLeuValaGIu 140
QY 421 CCGTGATTTGTGACATCTGTGCGACCCCTCAAGAAAGCATTTTATAGTCAAGAGAGACA 480
    |||
Db 141 ProTrpIleAlaGIyLeuTrPProAlaLeuArgLyHsIlePheArgSerArgGIyGIu 160
QY 481 GAGAGATTAATGTGGCGCATCTCCCGGTGGCATCAGCTGATCTTGGAGAGACAGCTTGTG 540
    |||
Db 161 GIuGIuIleSerGIyAlaLeuProValaAlaSerProAlaSerLeuValArgThrAspLeuVal 180
QY 541 AAGTCAGAGCTGTACACATTTGAATCTCAAGTGTGAGCTTGTGAGATTCATGATTCAGAGA 600
    |||
Db 181 LysSerGIuLeuLeuHsIleGIuSerGIuValaGIuLeuLeuValArgPheAspSerGIy 200
QY 601 AGAAGAGATTTGAGGTTTGAAGCAAAATGACAGTGAACAGCAACAAATCCAAATGTTGTA 660
    |||
Db 201 ArgLyAspSerGIuValaLeuLyGIuAsnAlaValaAsnSerAsnGIuSerAsnValaVal 220
QY 661 ATGGAAGATTTGAGTCTTCACTTACCCGTTCCGATACCCCACTCTTCAAGAGCTCTGTG 720
    |||
Db 221 IleGIuAspPheGIuSerLeuThrArgSerValaProProLeuSerGIuAlaSerLeu 240
QY 721 AATATTCCTGTATACCCCGAGATATTTATAGGTATGAGTATGACAGAGTCTTGGCCAG 780
    |||
Db 241 AsnIleProGIyLeuProProGIuTrPLeuGIuAlaHsIleuGIuGIuSerLeuGIyGIu 260
QY 781 GAGAAAGCCAAAGTATGTGTACTTACAGACATCCAGTTCAGTTTTCAGTGCCAAATTCAAAG 840
    |||
Db 261 GIuGIuSerGIuValaSerValaThrSerAlaAspProValaPheGIuValaProIleSerLyS 280
QY 841 GCATTTCACTTATAGCAATGATGCAATAAAACCACTGCTGAGTGAATTTGGACATT 900
    |||
Db 281 AlaValGIuLeuThrThrAsnAspAlaIleLySerThrLeuLeuValaGIuLeuAspIle 300
QY 901 TCAATACAGACTTTCTTATACAGCTGAGAGATGCTTTCAGCGGTGATCTGCTTAACAGT 960
    |||
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Db	301	SerMetThrAspPheSerTyrGlnProGlySerAlaPheSerValIleCysProAsnSer	320
QY	961	GATTCGAGGTACAAAGCCTTACTCCAAAGACGTGACGCTTGAAATAAAGAGACATGC	1020
Db	321	AspSerGlnValAlaGlnSerLeuGlnArgLeuGlnLeuGlnAspGlyArgGlnHisCys	340
QY	1021	GGCCCTTTGAAAAATAAGCAGACACAAAGAAAGAAAGAGCACTTACCACAGATATA	1080
Db	341	ValLeuLeuLysIleLysAlaAspThrLysLysGlyAlaThrLeuProGlnHisIle	360
QY	1081	CCTGGCGGAGTGTCTCTCCAGTTCATTTTAACTGCTGTCTTGAATCCGAGCAATTCCT	1140
Db	361	ProAlaGlyCysSerLeuGlnPheIlePheThrTrpCysLeuGlnIleArgAlaIlePro	380
QY	1141	AAAAAGGCAATTTTTCGAGCCCTTGTGACCTTACCAGTACAGTCTGAAAAGCGCAGG	1200
Db	381	LysLysAlaPheLeuAlaGlyAlaLeuValAspTyrThrIleAspSerAlaGlnLysArgArg	400
QY	1201	CTACAGAGCCTTGAGAGTAAACAAAGGGCAGCCGAAATTAGCCGGCTTTGTACAGATATCC	1260
Db	401	LeuGlnGlnLeuCysSerLysGlnGlyAlaAlaAspTyrSerArgPheValArgAspAla	420
QY	1261	TGTGCTGCTGTGTGATCTCTCTCTCGCTTCTCCCTTGTTCGACCAACCACTAGTCTC	1320
Db	421	CysAlaCysLeuLeuAspLeuAspLeuLeuAlaPheProSerCysGlnProLeuSerLeu	440
QY	1321	CTGCTCGAATCTTCCTTAACTTCAACCCGAGCAATTTGTGTGAGTCAAGTCAATTTA	1380
Db	441	LeuLeuGlnLysLeuProLysLeuGlnProArgProTyrSerCysAlaSerSerLeu	460
QY	1381	TTTCACCAGCAAAAGCCTCATTTTGTCTTCAACATTTGTGAATTTGTCTTACGTCCACA	1440
Db	461	PheHisProGlyLysLeuHisAspHeValIlePheAsnIleValGlnPheLeuSerThrAlaThr	480
QY	1441	ACAGAGCTTCCGCGAAGAGAGTATGTACAGGCTGGCTGTGTGTGCTTCAGTT	1500
Db	481	ThrGlnValLeuValLysGlyValCysThrGlyTrpLeuAlaLeuLeuValAlaSerVal	500
QY	1501	CTTCAGCCAAACATACATGATCCCATAGACAGCGGAAAGCCTTGCTCCATAGATA	1560
Db	501	LeuGlnProAsnIleHisAlaSerHisGlnLysSerArgLysAlaLeuAlaProLysIle	520
QY	1561	TTCATCTCTCTCGAACAACAATTTCTTCCATTCACATGATACCCCTCAATCCCATC	1620
Db	521	SerIleSerProArgThrThrAsnSerPheHisLeuProAspAspProSerIleProIle	540
QY	1621	ATAATGTGTGGGTCCAGAAACCGGACATACCCCGTTTATTTGGCTTCTCAACATAGAGAG	1680
Db	541	IleMetValGlyProGlyThrGlyIleAlaProPheIleGlyLysPheLeuGlnHisArgGln	560
QY	1681	AAACTCCAAAGAACCAACCCACAGATGAAATTTTGAGCAGATGTGGTGTGTTTGGCTGC	1740
Db	561	LysLeuGlnGlnLysGlnHisProAspGlyAsnPheGlyAlaMetCysTrpLeuPhePheGlyCys	580
QY	1741	AGGCAATAGATAGGAGTATATCTATTCAGAAAAGGTCACAACTTCCTTAACATAGGG	1800
Db	581	ArgHisLysAspArgAspTyrLeuPheArgLysGlnLeuAlaGlnHisPheLeuLysHisGly	600
QY	1801	ATCTTAACTCATTAAGATTTCTCTTCCAAAGAGATGCTCTGTGTGGGAGAGAGAGCC	1860
Db	601	IleLeuThrHisLeuLysValIleSerPheSerArgAspAlaProValGlyGlnGlnAla	620
QY	1861	CCAGGAAAGTATGTACAGACACATCCAGCTTCATGCGCCAGCAGGGTGGCAGAAATCTC	1920
Db	621	ProAlaLysTyrValGlnAspAsnIleGlnLeuHisGlyGlnGlnValAlaArgIleLeu	640
QY	1921	CTCCAGAGGAACGGCATATTTATGTGTGTGAGATGCAAAAGATATAGGCCCAAGAGATA	1980
Db	641	LeuGlnGlnLysAsnGlnHisIleTyrValCysGlyAspAlaLysAsnMetAlaLysAspVal	660
QY	1981	CATGATGCCCTTGTGCAAATATAAGCAAGAGGTGAGTTGAAAACTAGAGCATG	2040

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Db      661 HIsaPpAlaLeuValGlnIleIleSerLysGluValGlyValGluLysLeuGluValMet 680
Qy      2041 AAACCCCTGGCCACTTTAAAGAGAGAAAAAGCGTACCTTCAGAGATATTTGGTCA 2094
Db      681 LysThrLeuAlaThrLeuLysGluGluLysArgTyrLeuGlnAspIleTyrSer 698

RESULT 5
US-09-371-347A-46
/ Sequence 46, Application US/09371347A
/ GENERAL INFORMATION:
/ APPLICANT: Gravel, Roy A,
/ APPLICANT: Rozen, Rima
/ APPLICANT: Leclerc, Daniel
/ APPLICANT: Wilson, Aaron
/ APPLICANT: Rosenblatt, David
/ TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
/ TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBB
/ FILE REFERENCE: 50004/003003
/ CURRENT APPLICATION NUMBER: US/09/371,347A
/ PRIOR FILING DATE: 1999-08-10
/ PRIOR APPLICATION NUMBER: 09/232,028
/ PRIOR FILING DATE: 1999-01-15
/ PRIOR APPLICATION NUMBER: 60/071,622
/ NUMBER OF SEQ ID NOS: 61
/ SOFTWARE: FastSeq for Windows Version 4.0
/ SEQ ID NO: 46
/ LENGTH: 697
/ TYPE: PRT
/ ORGANISM: Homo sapiens
US-09-371-347A-46

Alignment Scores:
Pred. No.:      1,79e-66      Length:      697
Score:          3609.50      Matches:      697
Percent Similarity: 99.86%      Conservative: 0
Best Local Similarity: 99.86%      Mismatches: 0
Query Match:     95.79%      Indels:      1
DB:              1          Gaps:      1

us-09-371-347a-1 (1-2097).x US-09-371-347A-46 (1-697)
Qy      1 ATGAGAGAGTTTCTGTACTATATGCTACACAGCAGGACAGGCAAGGCCATTCGCAGAA 60
Db      1 MetArgArgPheLeuLeuLeuLysThrAlaThrGlnGlnGlyAlaIleAlaIleAlaGlu 20
Qy      61 GAAATGTTGAGCAGCTGTGGTACATGATTTTTCGACGATCTTCACGCTATTGATGAA 120
Db      21 GlnMetCysGluGlnAlaValAlaHisGlyPheSerAlaAspLeuHisCysIleSerGlu 40
Qy      121 TCCGATAAGTATGACCTTAAAAACGMAACAGCTCCTCTGTGTGTGTGGTTTCTACACAG 180
Db      41 SerAspLysTyrAspLeuLysThrGlnThrAlaPheLeuValValValSerThrThr 60
Qy      181 GGCACCGGAGACCCACCCGACACAGCCCGGCAAGTTTGTTAAGAAATACAGAACCAAA 240
Db      61 GlyThrArgLysAspProPheAspThrAlaArgLysPheValLysGluIleGlnAsnGlnThr 80
Qy      241 CTGCCGGTGAATTTCTTGTGTCACCTCGGCGTATGGGTTACTGGGCTCGGATTCAGAA 300
Db      81 LeuProValAspPhePheAlaHisLeuArgTyrGlyLeuLeuGlyLeuGluLysPheSerGlu 100
Qy      301 TACACCTTACTTTTGCATGCGGGGGAGAAATATGTATTAACGACTTCAAGAGCTTGGAGCC 360
Db      101 TyrThrTyrPheCysAsnGlyGlyLysIleIleAspLysArgLeuGlnGlnLysGlyAla 120
Qy      361 CGGCAATTTCTATGACATCGGACATGCAATGATGATGCTGTGATGGTTTGAAGTGTGGTTGAG 420
Db      121 ArgHisPheTyrAspThrGlyHisAlaAspAspCysValGlyLeuGluLeuValValGlu 140
Qy      421 CCGGAGATTGTGCACTCTGCGCAGCCCTTCAGAAAGCAATTTTATGGTCAAGCAGAGACAA 480

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Db      141  ProtrilleaGlyLeuTrpProAlaLeuArgLysHisPheArgSerArgGlyGln 160
Qy      481  GAGAGAGTAAGTGGCGCATCCCGGTGGCATCACCTGATCCCTTGAGAGACGACTTGTG 540
Db      161  GluGluIleSerGlyAlaLeuProValAlaSerProAlaSerLeuArgThsAspLeuVal 180
Qy      541  AAGTCAGAGCTGTACACATTTGAATCTCAAGTCAGCTTGTGAGATTGATGATTCAGA 600
Db      181  LysSerGluLeuLeuHisIleGluSerGlnValGluLeuLeuArgPheAspSerGly 200
Qy      601  AGAAGAGATTCTGAGGTTTGTAGACCAAAATGCAGTGAACAGCAACCAATCCATGTTGA 660
Db      201  ArgLysAspSerGluValIleuLysGlnAsnAlaValAsnSerAsnGlnSerAsnVal 220
Qy      661  ATTGAAGACTTGTGAGCTCTCACTTACCCGTGGTACCCCGACCTCAAGACCTCTCTG 720
Db      221  IleGluAspPheGluSerLeuThrArgSerValProProLeuSerGlnAlaSerLeu 240
Qy      721  AATATCTGTGGTTACCCCGAGAAATATTACAGGTACATCTGCAGAGTCTCTGGCCAG 780
Db      241  AsnIleProGlyLeuProProGluTyrLeuGlnValHisLeuGlnGluSerLeuGlyGln 260
Qy      781  GAGGAAAGCCAGATCTGTGACTTCAGCAGATCCAGTTTTCAGTGCATTTCAAAG 840
Db      261  GluGluSerGlnValSerValThrSerAlaAspProValPheGlnValProIleSerLys 280
Qy      841  GCAGTTCACTTACTAGGAATGATGCCATAAAACCACTCTGCTGTRGAAATTGGACATT 900
Db      281  AlaValIleuThrThrAsnAspAlaIleLysThrThrLeuLeuValGluLeuAspIle 300
Qy      901  TCAAATACAGACTTTTCTCATCAGCTGAGAGATGCTTCAGCTGATCTGCCCTAACAGT 960
Db      301  SerAsnThrAspPheSerTyrGlnProGlyAspAlaPheSerValIleCysProAsnSer 320
Qy      961  GATTCTGAGGTACAAAGCTTACTCCAAAGACTGCAGCTTGAGATTAAGAGAGACTGC 1020
Db      321  AspSerGluValGlnSerLeuLeuGlnArgLeuGlnLeuAspLysArgGluHisIleCys 340
Qy      1021  GTCTTTTGAATAATTAAGGCGACACAAAGAAAGAGACTTACCTTACCCGACATTTA 1080
Db      341  ValLeuLeuLysIleLysAlaAspThrLysLysGlyAlaThrLeuProGlnHisIle 360
Qy      1081  CTTGCGGGAGTGTCTCCAGTTCATTTTCTGTGTCCTTGAATCCGACAATTCCT 1140
Db      361  ProIleGlyCysSerLeuGlnPheIlePheThrTyrCysLeuGluIleArgAlaIlePro 380
Qy      1141  AAAAAGCATTTTTCGAGCCCTGTGACTATACCACTGACAGTGCAGTGTGAAAAGCGCAG 1200
Db      381  LysLysAlaPheLeuArgAlaLeuValAspTyrThrSerAspSerAlaGluLysArgArg 400
Qy      1201  CTACAGAGCTGTGCAGTAAACAAAGGGGCGACCCGATTTACCCGCTTTGTACGAGATGCC 1260
Db      401  LeuGlnGluLeuLysSerLysGlnGlyAlaAlaAspTyrSerAspPheValArgAspAla 420
Qy      1261  TGTGCTGCTGTGGATCTCTCTCTGCTTCCCTTTTCCGAGCCAGCACTCAGTCTC 1320
Db      421  CysAlaCysLeuLeuAspLeuLeuLeuAlaPheProSerCysGlnProProLeuSerLeu 440
Qy      1321  CTGCTCGAACAATCTTCTAAACTTCAACCCAGACCATATTGCTGTGCAAGCTCAAGTTTA 1380
Db      441  LeuLeuGlnHisLeuProLysLeuGlnProArgProTyrSerCysAlaSerSerLeu 460
Qy      1381  TTTTACCCAGGAAAGCTCATTTTGTCTTCAACATTTGTGGAATTTTGTCTACTGCCACA 1440
Db      461  PheHisProGlyLysLysHisPheValPheAsnIleValGluPheLeuSerThrAlaThr 480
Qy      1441  ACAGAGGTTCTGGGAGGAGAGTATGTACAGAGTGGCTGAGCTTGTGCTTCAAGTT 1500
Db      481  ThrGluValLeuArgLysGlyValCysThrGlyTyrPheAlaLeuLeuValAlaSerVal 500
Qy      1501  CTTGAGCCAAACATACATGATCCATGACATGACAGCGGAAAGCCCTGAGCTCTAAGATA 1560
Db      501  LeuIleProAsnIleHisAlaSerHisGluAspSerGlyLysAlaLeuAlaProLysIle 520

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Qy      1561  TCAATCTCTCGAACAACAATTTCTTTCACCTTACAGATGACCCCTCAATCCCATC 1620
Db      521  SerIleSerProArgThrThrAsnSerPheHisLeuProAspPheProSerIleProIle 540
Qy      1621  ATAAAGTGGGTCCGAGAACCGGCAATGCCCGTTTATTTGAGTTCTTACCAATGAGAG 1680
Db      541  IleMetValGlyProGlyThrGlyIleAlaProPheIleGlyPheLeuGlnHisArgGlu 560
Qy      1681  AAATCTCAAGAACCAACCCAGATGGAATTTTGGACCAATGTGCTTTTGTGGCTGC 1740
Db      561  LysLeuGlnGluGlnHisProAspGlyAsnPheGlyAlaMetCys 579
Qy      1741  AGCATAAGGATAGGAGATTATCTATTACAAAAGAGCTCAGACATTTCTTAAGCATGGG 1800
Db      580  ArgHisLysAspArgAspTyrLeuPheArgLysGluLeuArgHisPheLeuLysHisGly 599
Qy      1801  ATCTTAATCATCTTAAAGGTTTCTCTCTCAAGAGATCTCTGTGGGAGAGAGAACCC 1860
Db      600  IleLeuThrHisLeuLysValSerPheSerArgAspAlaProValGlyGluGluValAla 619
Qy      1861  CCAGCAAAAGTATGTACAAAGACACATCCAGCTTCAATGGCCAGCGTGGGAGAAATCTC 1920
Db      620  ProAlaLysTyrValGlnAspAsnIleGlnLeuHisGlyGlnGlnValAlaArgIleLeu 639
Qy      1921  CTCGAGAGAACCGGCATATTTATGTGTGAGATGCAAAAGAAATATGCGCAAGATGTA 1980
Db      640  LeuGlnGluAsnGlyHisIleTyrValCysGlyAspAlaLysAsnMetAlaLysAspVal 659
Qy      1981  CATGATCCCTTGTGCAATTAATTAAGCAAGAGGTTGAGTTGAAAATAGAACATG 2040
Db      660  HisAspAlaLeuValGlnIleIleSerLysGluValGlyAlaGluLysLeuAlaMet 679
Qy      2041  AAAACCTGGCCACTTTTAAAGAAAGAAACGCTACCTTCAGATATTGTTGCTCA 2094
Db      680  LysThrLeuAlaThrLeuLysGluLysArgTyrLeuGlnAspIleTyrSer 697

RESULT 6
US-09-371-347A-48
; Sequence 48, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A.
; APPLICANT: Rozen, Rama
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; TITLE OF INVENTION: DEFECTS, CARDIOVASCULAR DISEASE, AND CANCER
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371.347A
; CURRENT FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 48
; LENGTH: 689
; TYPE: PRF
; ORGANISM: Homo sapiens
US-09-371-347A-48

Alignment Scores:
Pred. No.: 4,55e-64 Length: 689
Score: 3481.00 Matches: 687
Percent Similarity: 98.57% Conservative: 1
Best Local Similarity: 98.42% Mismatches: 1
Query Match: 92.38% Indels: 9
DB: 1 Gaps: 6
us-09-371-347a-1 (1-2097) x us-09-371-347a-48 (1-689)

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QY 4 AGGAGTTCTTCTTACTATATGCTTACAGAGAGGACAGCAAGCCATGCGAAGAA 63
Db 1 ArgHisPheLeuLeuLeuLeuLeuLeuLeuLeuLeuLeuLeuLeuLeuLeuLeuLeu 20
QY 64 ATGTGTGAGCAAGCTGTGTGATGATGATTTCTGAGATCTTCACTGATGATGAAATCC 123
Db 21 MetCysGlnGlnAlaValAlaHisGlyPheSerAlaAspLeuHisCysGlySerGlnSer 40
QY 124 GATAGATGATGACTTAAACCGAAACGAGCTCTCTGTTGTTGTTGTTGTTTCAACAGGCG 183
Db 41 AspLysTyrAspLeuLysThrGluThrAlaProLeuValAlaValSerThrThrGly 60
QY 184 ACCGAGAGCCAGCCGACAGAGCCGCAAGTTGTTAGGAAATACAGAACCAACCTG 243
Db 61 ThrGlyAspProAspThrAlaArgLysPheValLysGlnLysGlnAsnGlnThrLeu 80
QY 244 CCGGTTGATTTCTTGTCTCACCTGGGATGAGTTACTGGGTCTCGATGATTCAGAAATAC 303
Db 81 ProValAspPhePheAlaHisLeuArgThrGlyLeuGlnGlyLeuGlyAspSerGlnThr 100
QY 304 ACCTACTTTTGCATGGGGGGAAGATTAATTGATTAACGACTTCAAGACTTGGAGCCCG 363
Db 101 ThrTyrPheCysAsnGlyGlyLysIleLeuAspLysArgLeuGlnGlnLysAlaArg 120
QY 364 CATTTCTATGACACTGGACATGACATGATGATGATGATGATGATGATGATGATGATGATG 423
Db 121 HisPheTyrAspThrArgLysHisAlaAspAspCysValGlyLeuGlnLeuValAlaGlnPro 140
QY 424 TGGATTTGCTGACTCTGGCCAGCCCTCAGAAAGCATTTTAGGTCAAGCAGAGCAAG 483
Db 141 TrpIleAsnGlyLeuThrProAlaLeuArgLysHisPheArgSerSerArgGlyGlnGln 160
QY 484 GAGTAAGTGGCGGACCTCCGCGTGGCATCAGCTGATCCTTGAAGACAGACTTGTGAG 543
Db 161 GlnIleSerGlyAlaLeuProValAlaSerProAlaSerLeuArgThrAspLeuValLys 180
QY 544 TCAGAGCTGCTACACATTTGAATCTCAAGTCAAGCTTCAAGATTCGATTCAGAGAA 603
Db 181 SerIleuLeuLeuHisIleGlnSerGlnValGlnLeuLeuArgPheAspAspSerGlyArg 200
QY 604 AAGGATTTCTGAGTTTGAAGCAAAATGCACTGAACAGCAACCAATCCATGTTGTAAT 663
Db 201 LysAspSerGlnValLeuLysGlnAsnAlaValAsnSerAsnGlnSerAsnValAlaIle 220
QY 664 GAAACTTTGAGTCTCACTTACCGGTTCCGCTACCCCACTCCACAGCCTCTCTGAAT 723
Db 221 GlnAspPheGlnSerSerLeuThrArgSerValProProLeuSerGlnAlaSerLeuAsn 240
QY 724 ATTCTGATTTACCCCAAGATATTTTACAGGTACATCTGACAGAGTCTTGGCCAGAG 783
Db 241 IleProGlyLeuProProGluTyrLeuGlnValHisIleuGlnGlnSerLeuGlnGln 260
QY 784 GAAAGCCCAAGTATCTGTGACTTCAGCAGATCCAGTTTTCAGTCCCAATTTCAAGGCA 843
Db 261 GlnSerGlnValSerValThrSerAlaAspProValPheGlnValProIleSerLysAla 280
QY 844 GTTCAACTTCTACAGATGATGCATTAACCACTGCTGCTGATGATGATGATGATGATGAT 903
Db 281 ValGlnLeuThrThrAsnAspAlaIleLysThrThrLeuLeuValGlnLeuAspIleSer 300
QY 904 AATAACAGCTTTTCTTACAGCTTGAAGATGCTTCAAGCTGATCTGCTTCAACAGTAT 963
Db 301 AsnThrAspPheSerTyrGlnProGlyAspAlaPheSerValIleCysProAsnSerAsp 320
QY 964 TCTGAGGTACAAAGCTTACTCCAAAGACTGCAAGCTTGAAGATTAAGAGAGCACTGGCTC 1023
Db 321 SerGlnValGlnSerLeuLeuGlnArgLeuGlnLeuGlnLysArgGlnHisCysVal 340
QY 1024 CTTTGAATAATTAAGGAGACACAAAGAAAGAGAGCTTCACTTACCCAGCAATATACCT 1083
Db 341 LeuLeuLysIleLysAlaAspThrLysLysLysGlyAlaThrLeuProGlnHisIlePro 360
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QY 1084 GCGGAGATGTTCTCTCCAGTTCAATTTTACCTGAGTGTCTTAAATCCAGCAATTCCTAAA 1143
Db 361 AlaGlyCysSerLeuGlnPheIlePheThrTyrPheLeuGlnIleAlaGlnAlaIleProLys 380
QY 1144 AAGCATTTTTCGAGAGCCCTTGTGACTATACGATGACAGTGCATGAAAGCCGAGGCTA 1203
Db 381 LysAlaPheLeuArgAlaLeuValAspTyrThrSerAspSerAlaGlnLysArgLysLeu 400
QY 1204 CAGAGCTGTGCACTTAAACAGGGGACGCCGATTAATAGCCGCTTGTGACAGATCCCTGT 1263
Db 401 GlnGlnLeuCysSerLysGlnGlyAlaAlaAspTyrSerArgPheValArgAspAlaCys 420
QY 1264 GCCTGCTTGGATTCCTCCTCGCTTCCCTTCCCTTCCCTTCCGACGACACACTGATCTCTG 1323
Db 421 AlaCysLeuLeuAspLeuLeuAlaPheProSerCysGlnProProLeuSerLeuLeu 440
QY 1324 CTCGAACATCTTCTTAACTTCAACCCAGACCAATATTCGTGCAAGCTCAAGTTTATTT 1383
Db 441 LeuGlnHisLeuProLysLeuGlnProArgProTyrSerCysAlaSerSerSerLeuPhe 460
QY 1384 CAGCCAGAAAGCTCCATTTTGTCTTCAACATTTGTGATTTCTGTCTTACTGCCACAA 1443
Db 461 HisProGlyLysLeuHisPheValPheAsnIleValGlnPheLeuSerThrAlaThr 480
QY 1444 GAGGTTCTGGGAAAGGAGATGATGACAGCTGAGCTGCTGTTGTTGCTTCAAGTTCTT 1503
Db 481 GlnValLeuArgLysGlyValCysThrGlyTrpLeuAlaLeuLeuValAlaSerValLeu 500
QY 1504 CAGCAAAACATACATGATCCATGAAAGACAGCGGGAAGCCCTGCTCTTAAGATATCC 1563
Db 501 GlnProAsnIleHisAlaSerHisGlnAspSerGlyLysAlaLeuAlaProLysIleSer 520
QY 1564 ATCTCTCCCTGGAACAACAATTTCTTCCATTCACAGATGACACCCCTCAATCCCATCAT 1623
Db 521 IleSerProArgThrThrAsnSerPheHisLeuProAspAspProSerIleProIle 540
QY 1624 ATGGTGGTCCAGAAACCGGACATAGCCCGCTTATTTGAGTTCTTCAACAATAGAGAAA 1683
Db 541 MetValGlyProGlnThrGlyIleAlaProPheIleGlyPheLeuGlnHis----ArgAs 559
QY 1684 CTCCAAGACACACCCAGATGGAATTTTGGACAAATGTGTTGTTTGGCTGCAGG 1743
Db 559 nSerLysAsnAsnThrGlnMetGlnLeuGlnGlnCysGlyCysPheLeuAlaIle 579
QY 1744 CATTAAGATGAGGATTAATCATTCAGAAAAGACTCAGACATTTCTTAAAGATGAGATC 1803
Db 579 YlleArgIleGlyIleIleTyrSerGlnLysSerSerAspIleSerLeuSerMetGlyse 599
QY 1804 TTAACATCTTAAAGGTTCTCTTCAAGAGATGCTCTGTTGGGAGAGAGAGCCCA 1863
Db 599 r-----LeuIleArgPheProSerGlnGlnMetLeuLeuLeuGlnArgArgLysProG 617
QY 1864 GCAAAATATATACAAAGCAACATCCAGCTTCAATGCGCAGAGGTGCGAGATCTCTCTC 1923
Db 617 ngInserMetTyrLysThrThrSerSerPheMetAlaSerArgTyrArgGlnSerSerse 637
QY 1924 CAGAGAGAGGCAATTTTATGTGTGAGAGATGCAAGAAATATGAGCAAGATGATACAT 1983
Db 637 rArgArgGlnAlaAlaPheMetCysValGlnMetGlnArgIleTrpProArgPheCysThr 657
QY 1984 GATGCCCTTGTGCAAAATTAATAGCAAAAGAGTTGAGTTGAAAATCAGAACGATGAAA 2043
Db 657 tMetProLeuCysLys-----AlaLysArgLeuGlnLysLysAsn---LysGln---Ly 673
QY 2044 ACCCTGGCACTTAAAGAAAGAAAGAGCTTACCTTCAAGATTTTGGTTCAT 2095
Db 673 sProTrpProLeu---LysLysLysAsnAlaThrPheArgIlePheGlnHis 689
```

RESULT 7

US-09-371-347A-22

; Sequence 22, Application US/09371347A

; GENERAL INFORMATION:

; APPLICANT: Gravel, Roy A,


```

APPLICANT: Rozen, Rima
APPLICANT: Leclerc, Daniel
APPLICANT: Wilson, Aaron
APPLICANT: Rosenblatt, David
TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
FILE REFERENCE: 50004/003003
CURRENT APPLICATION NUMBER: US/09/371,347A
CURRENT FILING DATE: 1999-08-10
PRIOR APPLICATION NUMBER: 09/232,028
PRIOR FILING DATE: 1999-01-15
PRIOR APPLICATION NUMBER: 60/071,622
PRIOR FILING DATE: 1998-01-16
NUMBER OF SEQ ID NOS: 61
SOFTWARE: FASTSEQ for Windows Version 4.0
SEQ ID NO 22
LENGTH: 682
TYPE: PR1
ORGANISM: Caenorhabditis elegans
US-09-371-347A-22

Alignment Scores:
Score: 4.09e-16 Length: 682
Percent Similarity: 914.00 Matches: 236
Best Local Similarity: 48.30% Conservative: 119
Query Match: 32.11% Mismatches: 288
                24.26% Indels: 92
                Gaps: 15

us-09-371-347a-1 (1-2097) x US-09-371-347A-22 (1-682)

QY 1 ATGAGAGAGTTTCTTATCTATGCTACACAGAGGACGCAAGCCATGCCAGAA 60
DB 1 MethraspPheLeuIleAlaPheGlySerGlnThrGlnAlaGlnThrIleAlaLys 20
QY 61 GAATGAGTGCAGCAAGTGTGTACATGATTTTCTGCAGATCTTCACTGTATTAGTAA 120
DB 21 SerLeuLysGlnLysAlaGlnLeuIleGlyLeuThrProAlaGlnLeuAlaLeuAspGln 40
QY 121 TCCGATAGTATGACCTTAAACCGAACAACAGCTCTCTGTTGGTGGTTTCAACAG 180
DB 41 AsnGlnLysLysPheAsnLeuAsnGlnLysLysLeuGlyAlaIleValSerThr 60
QY 181 GGCACCGGAGACCCACCGACACAGCCCAAGTTTGTAAAGAAATACAGAACCAACA 240
DB 61 G1YAspGlyAspAlaProAspAsnCysAlaArgPheValArgArgIleAsnArgAsnSer 80
QY 241 CTGCGCGGTGATTTCTTGTCTCACCTGCGGTATGAGGTACTGGGTCTGCGTATTCAGAA 300
DB 81 LeuGlnAsnGlnLysLysLeuAsnLysPheValLeuLeuGlyLeuGlyAspSerAsn 100
QY 301 TACACCTACTTTTGGCAATGGGGGAGATATTTGTAAGACATTCAGACCTTGGAGCC 360
DB 101 TySerSerLysGlnThrIleProArgLysIleAspLysGlnLeuThrAlaLeuGlyAla 120
QY 361 CGCATTTTATGACACTGACATGACATGACATGCTGTAGTGTGTTGAACCTTGTGTTGAG 420
DB 121 AsnArgLeuPheAspArgAlaGlnAlaAspAspGlnValGlyLeuGlnLeuGlnValGln 140
QY 421 CCGGAGATTTGCTGACCTGCGACGCTTCAGAAAGCATTTTATAGTTCAGACAGAGAA 480
DB 141 ProTrpIleGlnLysPhePheAlaThrLeuAlaSerArgPheAspIleSerAlaAspLys 160
QY 481 GAGGAGATTAAGTGGGACACTCCCGGTGACATCACTGCACTTCCTTGGAGACAGACCTTGTG 540
DB 161 MetAsn-----AlaIleThrGlnSerSerAsnLeuLysLeuAsnGlnVal 175
QY 541 AAGTCAGAG-----CTGCTACACATTTGAATTCAGTCGACCTTCTGAGATTCAT 591
DB 176 LysThrGlnGlnGlnLysLysAlaLeuLeuGlnLysArgIleGlnAspGlnGlnSerAsp 195
QY 592 GATTTCAGGAGAGA----- 603

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DB 196 AspGlnLysArgGlyArgValIleGlyIleAspMetLeuIleProGlnHisLysAspLys 215
QY 604 AAGATTCTGAGGTTTGAAGCAAAATGCACTGAAACAGCAACCAATCCAAATGTTGTAAT 663
DB 216 ProGlnLysSerLeuLysGlySerGlnThrLeuSerAsnAspGlnAsnLeu----- 233
QY 664 GAAGACTTGTAGTCTCCTCACTTACCCGTTCCGTACCC-----CCACTCTCAAA 711
DB 234 -----ArgValProIleAlaProGlnProPheIleVal 244
QY 712 GCCTCTGATATATCTGTTTACCCCA-----GAATATTACAGGTACAT 759
DB 245 SerSerValSerAsnArgLysLeuProGlnLysPheThrLysLeuGlnLysProGlnAsnLys 264
QY 760 CTGACAGAGTCTCTTGGCCAGAGAAACCAAGATATCTGATCTTCAAGCATCCAGTT 819
DB 265 LysMetProGlnValThrLysPheProPheGlnValLeuValIleSerAlaGlnPheVal 284
QY 820 TTTCAGTGCCTATTTCAAGAGGAGTTCACTTACTGAAATGACATTAACCAACT 879
DB 285 ThrAsp---ProPheSerLys-----LysIleLysThrLys 295
QY 880 CTGCTGTAGATTTGACATTTCAAT-----ACAGACTTTTCTATCAAGCTGAGAT 933
DB 296 ArgMetIleThrValAspPheGlyAspPheIleAlaGlnLeuGlnLysProGlnLysAsp 315
QY 934 GCCTTACAGCGTATCTGCTTCAAGCATGATTTCTGATTCAGACCAAGCTTCAAGAGCTG 993
DB 316 AlaIleLysPheCysValProAsnProAlaLeuGlnValAlaPheIleLeuLysArgCys 335
QY 994 CAGCTGAGATTAAGAGACACTGGGCTCTTTGAATAATTAAGGACAGACAAAGAG 1053
DB 336 GlyValLeuAspPheIleAlaAspGlnGlnCysGlnLeuSerIleAsnProLysThrGlnLys 355
QY 1054 AAGAGACTACTTACCCAGCATATACCTGCGGAGATTTCTTCCAGTTCAATTTTACC 1113
DB 356 IleAsnAlaGlnIleProGlnLysIleValHisLysValIleThrThrLeuArgHisMetPheThr 375
QY 1114 TGGTGTCTTGAATCCGAGCAATTCCTTAAAGCAATTTTGGACGCTTGTGACAT 1173
DB 376 ThrCysLeuAspIleArgArgAlaProGlnLysArgProLeuIleArgValIleAlaGlnSer 395
QY 1174 ACCGATGACGTGCTGAAAGCGGAGGCTACAGAGCTGTGTCAGATTAACAGGGGAGCC 1233
DB 396 ThrSerAspProAsnGlnLysArgArgLeuLeuGlnLysCysSerAlaGlnGlyMetLys 415
QY 1234 GATTATAGCCGTTTGTACAGATGCTGTGCTGCTGTGTTGATCTCTCTGCTTTC 1293
DB 416 AspPheThrAspPheValArgThrProGlnLysSerLeuAlaAspMetLeuPheAlaPhe 435
QY 1294 CTTTCTTGCAGCCACCACTGACTCTCTGCTGCAACATCTTCTTAACCTTCAACCCAGA 1353
DB 436 ProAsnValLysProProValAspArgLeuIleGlnLeuLeuProArgLeuIleProArg 455
QY 1354 CCATATCTGCTGCAAGCTCAAGTTTATTCACCCAGAGAAAGCTCCATTTGTCTCAAC 1413
DB 456 ProTyrIleMetSerSer-----TyrGlnAsnArgLysAlaArgLeuIleLysSer 472
QY 1414 ATGTGGAATTTCTGCTACTGCCACAAAGAGGTTTCCAGAGAGGATGTATGTAAGGC 1473
DB 473 GlnMetGlnPheProAlaThrAspGlyArgArgHisSerArgLysGlyLeuAlaThrAsp 492
QY 1474 TGGCTGCGCTTGTGTGTTGCTTCACTTTCAGCCAAACATATCATGCCATGCCAGAAAGAC 1533
DB 493 TrpLeuAsnSerLeu----- 497
QY 1534 AGCGGAAAGCCCTGGCTCTTACAGATATTCATCTCTGCGAACAACAAATTTCTTCAC 1593
DB 498 -----ArgIleGlyAspLysValGlnValLeuGlnLysGlnProAlaArgPheArg 514
QY 1594 TTACCA-----GATGACCCCTCAATCCCATCATTAATGTGGGT 1632

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Oy      1099 CAGTTCATTTTAACTGGAGTCTGAAATTCGAGCAATTCCTAAAAAGCAATTTTGGCA 1156
Db      368 AATGThAlaLeuThrTyrTLeuAspIleThrAsnProIleArgThAsnValLeuTyr 387
Oy      1159 GCCCTTGTGCACTATACAGTGCAGACAGTCTGTGAAAAGCCAGGCTACAGAGCTGTGCAGT 1218
Db      388 GluLeuAlaGlnTyrAlaSerGluProSerGlnGlnIleuLeuAlaArgIleMetAlaSer 407
Oy      1219 AAACAAGGGGCAGCCGAT-----TATAGCCGCTTTGTAACGAGATGCTGTGCTTGG 1271
Db      408 SerSerGlyGlnGlyLysGluLeuTyrLeuSerTyrValAlaGlnAlaArgAlaGlnIle 427
Oy      1273 TTGATATCCCTCCCTGCTTCCTTCCTTCCTGACAGACACACATCCAGCTCTGCTGTGCAACAT 1333
Db      428 LeuAlaIleLeuGlnAspCysAspProSerLeuAsnArgProIleAspHisLeuGluGlnLeu 447
Oy      1333 CTTCCTTAACCTTCAACCCAGACACATATTCGTGTGCAAGCTCAAGTTTATTTTACCCAGCA 1392
Db      448 LeuProArgLeuGlnAlaArgTyrTyrSerIleAlaSerSerSerLysValHisProAsn 467
Oy      1393 AAGCTCCATTTTGTCTTCAACATTTGTGAATTTCTGTCTACTGCCACAACAGAGTTGTG 1455
Db      468 SerValHisIleCysAlaValAlaValAlaIuTyrGlnTyrIleTyrAlaGlyArg-----Ile 485
Oy      1453 CGAAGAGGGAGTATGATGACAGCGGCTGGGCTGTGTTGTTGCTTCAAGTCTTCAAGCAAC 1512
Db      486 AsnLysGlyValAlaIleThrAsnTyrLeu-----ArgAlaLysGlnPro--- 499
Oy      1513 ATACATGCATCCCATGAAAGACACCGGAAAGCCCTGCTCCTAAGATATCCATCTCTCT 1572
Db      500 -----ValGlyGluAsnGlyLysArgAlaLeuValPrometPheVal----- 513
Oy      1573 CGAACACAAATTCCTTCCACTTACCAAGATGACCCCTCAATCCCATATATATGTGGGT 1633
Db      514 ---ArgLysSerGlnPheArgLeuProPheLysAlaThrIleProValIleMetValGly 532
Oy      1633 CCAGAAACCGGAGTATGACCCCGCTTTATGGGTTCTCAACAAACATAGAGAAACTCCAGAA 1692
Db      533 ProGlnThrGlyValAlaProPheIleGlyPheIleGlnGlnArgAlaTyrLeuArgGln 552
Oy      1693 CAACACCCAGATGAAATTTTGGACCAATGTGGTTGTTTTTGGCTGACGACATTAAGAT 1752
Db      553 GlnGlyLysGlu-----ValGlyIleThrLeuLeuTyrTyrGlyCysArgAlaSerAsp 570
Oy      1753 AGGAGTTATCTATTCAGAAAAGAGCTCAGACATTTCTTAAGCATGGAGATCTTAATCAT 1812
Db      571 GluAspTyrLeuTyrArgGlnGluLeuAlaGlnPheHisAspAspGlyAlaLeuThrGln 590
Oy      1813 CTAAAGGTTTCTCTTCAAGAGATGCTCTGTGGAGAGAGAAAGCCCAAGCAAAAGAT 1872
Db      591 LeuAsnValAlaPheSerArg-----GlnGlnSerHisLysValTyr 604
Oy      1873 GTACAAAGCAACATCCAGCTTCAATGCGCAGACAGGTGGGAGAAATCTCTCCAGGAGAAC 1932
Db      605 ValGlnHisLeuLeuTyrGlnAspArgGlnHisLeuTyrPlys--LeuIleGlnGly 623
Oy      1933 GGCCATATTTATGTGTGTGAGATGTCAGAAAGATATGGCAGAGATGTACATGATGCTCTT 1992
Db      624 AlaHisIleTyrValCysGlyAspAlaIleArgAsnMetAlaAspAspValGlnAsnThrPhe 643
Oy      1993 GTGCAGATAATATAGCAAGAGGTTGGAATTTGAAAACATAGAAAGCAATGAAAACCTGTGCC 2055
Db      644 TyrAspIleValAlaGlnLeuGlnAlaMetGlnHisAlaGlnAlaValaAspTyrIleLys 663
Oy      2053 ACTTTAAAGAGAAAACGCTACCTTCAAGATATTTGCTCA 2094
Db      664 LysLeuMetThrLysGlyArgTyrSerLeuAspValTyrSer 677

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; APPLICANT: Gravel, Roy A.
; APPLICANT: Rozen, Rima
; APPLICANT: Lelcerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; TITLE OF INVENTION: DEFECTS, CARDIOVASCULAR DISEASE, AND CANCER
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371.347A
; PRIOR FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 54
; LENGTH: 29
; TYPE: PRT
; ORGANISM: Homo sapiens
US-09-371-347A-54

Alignment Scores:
US-09-371-347A-60

Alignment Scores:
Pred. No.: 0.0552 Length: 41
Score: 215.00 Matches: 41
Percent Similarity: 100.00% Conservative: 0
Best local Similarity: 100.00% Mismatches: 0
Query Match: 5.71% Indels: 0
DB: 1 Gaps: 0

us-09-371-347a-1 (1-2097) x US-09-371-347A-60 (1-41)

QY 1858 GCCCAGCAAGTATGTATCAAGACAGATCCAGCTTCATGGCCAGCAGTGGCAGATC 1917
Db 1 AAlrPhoAlaYsTyRvAlaGlnAspAmIleGlnMetHisGlyGlnAlaValAlaArgIle 20

QY 1918 CTCCTCCAGAGAAAGCGCCATATTATTTATGTGTGTGAGATGCAGAAATATGGCCAGAT 1977
Db 21 LeuLeuGlnGluAAsnGlyHisIleTyValCysGlyAspAlaIysAsnMetAlaIysAsp 40

QY 1978 GTA 1980
Db 41 Val 41

RESULT 10
US-09-371-347A-54
; Sequence 54, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A.
; APPLICANT: Rozen, Rima
; APPLICANT: Lelcerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; TITLE OF INVENTION: DEFECTS, CARDIOVASCULAR DISEASE, AND CANCER
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371.347A
; PRIOR FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 54
; LENGTH: 29
; TYPE: PRT
; ORGANISM: Homo sapiens
US-09-371-347A-54

Alignment Scores:

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Pred. No.: 0.869 Length: 29
Score: 158.00 Matches: 29
Percent Similarity: 100.00% Conservative: 0
Best Local Similarity: 100.00% Mismatches: 0
Query Match: 4.19% Indels: 0
DB: 1 Gaps: 0
us-09-371-347a-1 (1-2097) x US-09-371-347A-54 (1-29)

QY 259 GCTGACCTGGGTATGGGTACTGGGTCGCTGATTAGAAATACCTACTTTTGCAT 318
Db 1 AAlahsleuAgyTYgLYleuLenglyLenglyAspSerGlyrTYrPhecysAsn 20
QY 319 GGGGGAAGATATTGATTAACGACTT 345
Db 21 GlylylystlelleAspLysArgLeu 29

RESULT 11
US-09-371-347A-58
; Sequence 58, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A.
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; FILE REFERENCE: 50004/003003
; CURRENT FILING DATE: 1999-08-10
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 58
; LENGTH: 22
; TYPE: PRT
; ORGANISM: Homo sapiens
US-09-371-347A-58

Alignment Scores:
Pred. No.: 6.39 Length: 22
Score: 117.00 Matches: 22
Percent Similarity: 100.00% Conservative: 0
Best Local Similarity: 100.00% Mismatches: 0
Query Match: 3.11% Indels: 0
DB: 1 Gaps: 0
us-09-371-347a-1 (1-2097) x US-09-371-347A-58 (1-22)

QY 1612 ATCCCATCATATGATGGGTTCAGGAACGGCATACCCCGTTATTGGTTCCTCA 1671
Db 1 lleptolellewetValGlyProGlyThrGlylleAlaProPheIleGlyPheLeuGln 20
QY 1672 CATGA 1677
Db 21 HisArg 22

RESULT 12
US-09-371-347A-53
; Sequence 53, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A.
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
```

```
; TITLE OF INVENTION: DEFECTS, CARDIOVASCULAR DISEASE, AND CANCER
; FILE REFERENCE: 50004/003003
; CURRENT FILING DATE: 1999-08-10
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 53
; LENGTH: 23
; TYPE: PRT
; ORGANISM: Homo sapiens
US-09-371-347A-53

Alignment Scores:
Pred. No.: 6.41 Length: 23
Score: 116.00 Matches: 23
Percent Similarity: 100.00% Conservative: 0
Best Local Similarity: 100.00% Mismatches: 0
Query Match: 3.08% Indels: 0
DB: 1 Gaps: 0
us-09-371-347a-1 (1-2097) x US-09-371-347A-53 (1-23)

QY 160 GTTCTGTGTTTCTACAGGGCAGCGGACCGACACAGCCGCAAGTGTGTT 219
Db 1 ValValAlaIserThrThrGlyThrGlyAspProAspThrAlaArgLysPheVal 20
QY 220 AAGGAATA 228
Db 21 LysGluIle 23

RESULT 13
US-09-371-347A-25
; Sequence 25, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A.
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; FILE REFERENCE: 50004/003003
; CURRENT FILING DATE: 1999-08-10
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 25
; LENGTH: 18
; TYPE: PRT
; ORGANISM: Homo sapiens
US-09-371-347A-25

Alignment Scores:
Pred. No.: 10.7 Length: 18
Score: 109.00 Matches: 18
Percent Similarity: 100.00% Conservative: 0
Best Local Similarity: 100.00% Mismatches: 0
Query Match: 2.89% Indels: 0
DB: 1 Gaps: 0
us-09-371-347a-1 (1-2097) x US-09-371-347A-25 (1-18)

QY 1714 GAGCATGTGTTGTTTGTGCTGAGCATAGAGATAGGATATATCTATTC 1767
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Db      1  G1yAlawetTPlpLeuPhpHeG1yCaYsrgh1s1ySaPaRgAaP7y1LeuPh 18

RESULT 14
US-09-371-347A-55
; Sequence 55, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A,
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; TITLE OF INVENTION: DEFECTS, CARDIOVASCULAR DISEASE, AND CANCER
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; PRIOR FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 55
; LENGTH: 19
; TYPE: PRT
; ORGANISM: Homo sapiens
US-09-371-347A-55

Alignment Scores:
Pred. No.:      12.6      Length:      19
Score:           104.00    Matches:      19
Percent Similarity: 100.00%  Conservative: 0
Best Local Similarity: 100.00%  Mismatches: 0
Query Match:     2.76%      Indels:      0
DB:              1        Gaps:      0

US-09-371-347A-1 (1-2097) x US-09-371-347A-55 (1-19)

Qy      1342  CTTCAACCCAGACCATATTCGTGTCGACAGCTCAAGTTATTTCAACCCAGAAAGCTC 1398
Db      1  LeuGlnProAlaGProTyrSerCysAlaSerSerSerLeuPheHisProGlyIysLeu 19

RESULT 15
US-09-371-347A-52
; Sequence 52, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A,
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; TITLE OF INVENTION: DEFECTS, CARDIOVASCULAR DISEASE, AND CANCER
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; PRIOR FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 52
; LENGTH: 20
; TYPE: PRT
; ORGANISM: Homo sapiens
US-09-371-347A-52

Alignment Scores:
Pred. No.:      14.3      Length:      20
Score:           100.00    Matches:      20
Percent Similarity: 100.00%  Mismatches: 0
Best Local Similarity: 100.00%  Indels:      0
Query Match:     2.76%      Gaps:      0

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US-09-371-347a-1 (1-2097) x US-09-371-347A-52 (1-20)
OY      10 TTCTGTACTATATGCTACACAGCAGCAAGGCCATCGAGAATAATGNT 69
        |||||||
DB       1 PheUeuLeuEnyYrAlatHngInGnIngLyGlnAlaYsaIalIeAlagluwEcys 20

RESULT 16
US-09-371-347A-57
; Sequence 57, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A.
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; PRIOR FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 57
; LENGTH: 17
; TYPE: PRF
; ORGANISM: Homo sapiens
US-09-371-347A-57

Alignment Scores:
Pred. No.:          28.3           Length:          17
Score:              87.00          Matches:         17
Percent Similarity: 100.00%        Conservative:    0
Best Local Similarity: 100.00%     Mismatches:     0
Query Match:        2.31%          Indels:         0
DB:                 1             Gaps:              0

us-09-371-347a-1 (1-2097) x US-09-371-347A-57 (1-17)
OY      1450 CTCGGGAAGGAGTATGTACAGCGCTGCCTTTGTTGCTTCACGTT 1500
        |||||
DB       1 LeuArgYsgIValCyStHngLYTrPleuAlaleuEuValaIaseRval 17

RESULT 17
US-09-371-347A-56
; Sequence 56, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A.
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; PRIOR FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0

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; SEQ ID NO 56
; LENGTH: 14
; TYPE: PRT
; ORGANISM: Homo sapiens
US-09-371-347A-56

Alignment Scores:
Pred. No.: 72.7 Length: 14
Score: 68.00 Matches: 14
Percent Similarity: 100.00% Conservative: 0
Best Local Similarity: 100.00% Mismatches: 0
Query Match: 1.80% Indels: 0
Gaps: 0

us-09-371-347a-1 (1-2097) x US-09-371-347A-56 (1-14)

QY 1402 TTGTCTCAACATTGTGGAATTTCTGTCTACTGCGCAACAA 1443
Db 1 PheValPheAsnIleValGluPheLeuSerThrAlaThrThr 14

RESULT 18
US-09-371-347A-22
; Sequence 22, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A,
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE.
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371.347A
; PRIOR FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: PasteSeq for Windows Version 4.0
; SEQ ID NO 22
; LENGTH: 682
; TYPE: PRT
; ORGANISM: Caenorhabditis elegans
US-09-371-347A-22

Alignment Scores:
Pred. No.: 2.88 Length: 682
Score: 61.50 Matches: 113
Percent Similarity: 33.27% Conservative: 61
Best Local Similarity: 21.61% Mismatches: 175
Query Match: 1.65% Indels: 175
Gaps: 29

us-09-371-347a-1 (1-2097) x US-09-371-347A-22 (1-682)

QY 1353 TCTGGTGTGAAGTTTAGAAGATG---TTCGACGAGGAGCTGAGTGGCTGGCAAGA 1297
Db 168 SerAsnLeuSerLeuAsnGlnValIleThrGluGluGlySerAlaLeuGlnIle 187
QY 1296 AGGGAAGCGAGGAGGAGATCCAAAGACGACAGGCGATCTGTACAAAGCGGCTATA 1237
Db 188 ArgIleGluAspGluSerAspGluGlyArgIle-----ArgVal 202
QY 1236 ATGGGCGCCCTGTGTACTGCACAGCTCTGTAGAGCTGCTTTTACAGACTGCTACT 1177
Db 203 IleIleIle-----IleAspMetLeuIleProGluHisIleAspIleProGlu 217
QY 1176 GGTATAGTCACAGAGGCTGCAAAATGCTTTTATGGAATTGCTCGATTCAAGACA 1117
Db 218 IleSerLeuLeuIleGlySerGln-----Thr 226

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QY 1116 CCAAGTAAATGAATCTGAGAGAACATCCCGAGGTATATGCTGGGGTAGAGTCTCC 1057
Db 227 LeuSerAsnAspGluAsnLeuArgVal-Pro-----IleAlaPrt 239
QY 1056 TTTCCTTTGTGTGTCTGCTCTTATTTTCAAAAGACGAGCTGCTCTTTATCTTCAAG 997
Db 239 GlnProPheIleValSerSerValSerAsnArg-----LysLeuProGluAspThr 256
QY 996 CTGACAGCTTTGGAGTGAGGCTTTGTACTGAGATCACTGTATTGGAGACATCCAGCTGAA 937
Db 256 LysLeuGluIleProIleAsnLeuIle-----LysMetProGluValIleThr 271
QY 936 GGCATCTCCAGGCTGATAGGAAAAAGTCTGATTGGAATGTCATTCACACAGAGAGT 877
Db 272 -----LysProPheGluVal-----Le 277
QY 876 GGTTTTATGACATCATTCGTAGTAACTGACCTTGAATGGCACTTGAAAAAC 817
Db 277 uValValSerIleGluIlePheValThrAspProPheSerIleLysIleThrIleArgMet 297
QY 816 TGGATCTGTGAGTACAGAT-----ACTGGCTTCTCCTGGCGCAAGACATCC-- 765
Db 297 tIleThrValAspPheIleYasphIleAlaIleGluLeuGlnIleArgIleProGluAspAlaIle 317
QY 764 -----TGC-----AGATGTACTTG 751
Db 317 eIleYrPheCysValProAsnProAlaLeuGluValAsnPheIleLeuLysArgCys----- 335
QY 750 TAAATATTCGGGGGTAAACCAAGATATTCAGAGAGCTTTGAC-----AGTGG 700
Db 336 -----GlyValLeuAspIleAlaAspGlnGlnCysGluLeuSerIleAsnPr 351
QY 699 GGGGACCAAGGGGTAGTAGGAGCACTCAAGTCT-----TCAATTCACATCTGGA 649
Db 351 oluThrGluIleValIleAsnAlaGlnIleProGlyHisValHisLysIleThrThrLeuArg 371
QY 648 TTGGTGTCTGTCACTGATTTTGTCTTCAAAAGCTGAGATCTTTCTTCTGATCATC 589
Db 371 gHisMetPheThrThrCysLeuAspIleArgAlaProGly---ArgProLeuIleArg 390
QY 588 GAATCTCAGAGCTCCGACTTGAGAT-----TCAATGTGTAG 553
Db 390 gValIleuAlaGluSerThrSerAspProAsnGlnIleYasArgArgLeuLeuLeuCysSe 410
QY 552 CAGC-----TCTGACTTCACAGAGTCTGCTCCTCAAGAGTACAGGTGA 511
Db 410 rAlaGlnGlyMetIleYasPheThrAspPheValArgIleThrProGlyLeuSerIleAlaAs 430
QY 510 TGCACCCGAGAGTGCAGCACTTATCTCTTGTCTGCTTGTAC-----CTAAATG 457
Db 430 pMetLeuPheAlaPheProAsnValIle-----ProValAspArgLeuIleGluLe 448
QY 456 CTTTGTGAGGGCTGGCGACAGATCCAGCAATCCAGGCTCAACCAAGTTCTTAACCTTAC 397
Db 448 uLeuProArgLeuIleProArgProIleYrSerMetSerSerIleYrGluAsnArgIle 466
QY 396 ACAATCATCTGCATGTCTCAAGTGTCAATGAATGCCGGGCTCCAAAGCTTGTGAGTGT 337
Db 467 -----AlaArgIle 469
QY 336 ATCAATATTCCTCCCCCATTCGAAAAAGTAGTGTAATTCGAATCAACCGAGCCAGTAA 277
Db 479 rAspGlyArgArgHisSerArgIleGlyLeuAlaIleAspIlePrtP-----LeuAs 495
QY 276 CCGATACCGAGGTAGGCAAGAAATCAACCCGCAATGTTGTGTGTGTAATTCCTTAAAC 217
Db 216 AAATCTGCGG-----GCTGTGTGCGGTGGGTCTCCGGTG----- 183
QY 495 nSerIleuArgIleGlyAspLysValGlnValLeuGlyIleYrGluProAlaArgPheArgIle 515
Db 182 -----CCCGTGTGTGAAGAACCAACAAAGAGGA----- 153

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; APPLICANT: Gravel, Roy A,
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; PRIOR FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 30
; LENGTH: 18
; TYPE: PRT
; ORGANISM: Aspergillus niger
US-09-371-347A-30

Alignment Scores:
Pred. No.: 85.4 Length: 18
Score: 58.00 Matches: 10
Percent Similarity: 66.67% Conservative: 2
Best Local Similarity: 55.56% Mismatches: 6
Query Match: 1.54% Indels: 0
DB: 1 Gaps: 0

us-09-371-347a-1 (1-2097) x US-09-371-347A-30 (1-18)
Qy 1714 GGAGCAATGCTGTTGTTTGGCTGCGAGCATAGAGTATGATATTC 1767
Db 1 G1yArGwethrleuValPheGlyCysArgPheGlyuAspPheLeuYr 18

RESULT 23
US-09-371-347A-38
; Sequence 38, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A,
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; PRIOR FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 38
; LENGTH: 18
; TYPE: PRT
; ORGANISM: Thiacapsea roseopersicina
US-09-371-347A-38

Alignment Scores:
Pred. No.: 88.7 Length: 18
Score: 57.00 Matches: 10
Percent Similarity: 66.67% Conservative: 2
Best Local Similarity: 55.56% Mismatches: 6
Query Match: 1.51% Indels: 0
DB: 1 Gaps: 0

us-09-371-347a-1 (1-2097) x US-09-371-347A-38 (1-18)
```

```

Qy 1714 GGAGCAATGCTGTTGTTTGGCTGCGAGCATAGAGTATGATATTC 1767
Db 1 G1yArGwethrleuValPheGlyCysArgPheGlyuAspPheLeuYr 18

RESULT 24
US-09-371-347A-32
; Sequence 32, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A,
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; PRIOR FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 32
; LENGTH: 18
; TYPE: PRT
; ORGANISM: Homo sapiens
US-09-371-347A-32

Alignment Scores:
Pred. No.: 95.5 Length: 18
Score: 55.00 Matches: 9
Percent Similarity: 66.67% Conservative: 3
Best Local Similarity: 50.00% Mismatches: 6
Query Match: 1.46% Indels: 0
DB: 1 Gaps: 0

us-09-371-347a-1 (1-2097) x US-09-371-347A-32 (1-18)
Qy 1714 GGAGCAATGCTGTTGTTTGGCTGCGAGCATAGAGTATGATATTC 1767
Db 1 G1yArGwethrleuValPheGlyCysArgPheGlyuAspPheLeuYr 18

RESULT 25
US-09-371-347A-29
; Sequence 29, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A,
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; PRIOR FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 29
; LENGTH: 18
; TYPE: PRT
; ORGANISM: Vigna radiata
US-09-371-347A-29
```



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Alignment Scores:
Pred. No.: 99 Length: 18
Score: 54.00 Matches: 8
Percent Similarity: 72.22% Conservative: 5
Best Local Similarity: 44.44% Mismatches: 5
Query Match: 1.43% Indels: 0
DB: 1 Gaps: 0

us-09-371-347a-1 (1-2097) x US-09-371-347a-29 (1-18)

QY 1714 GGAGCAATGCTGTTTGGCTGCAGCATAGGATTAATTCATTC 1767
Db 1 GlyProalaleuLeuPheGlyCyeharGlysaRgsarGlnMetAspPheIleTyr 18

RESULT 26
US-09-371-347a-28
; Sequence 28, Application US/09371347a
; GENERAL INFORMATION:
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347a
; CURRENT FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 28
; LENGTH: 18
; TYPE: PRT
; ORGANISM: Drosophila melanogaster
US-09-371-347a-28

Alignment Scores:
Pred. No.: 103 Length: 18
Score: 53.00 Matches: 8
Percent Similarity: 66.67% Conservative: 4
Best Local Similarity: 44.44% Mismatches: 6
Query Match: 1.41% Indels: 0
DB: 1 Gaps: 0

us-09-371-347a-1 (1-2097) x US-09-371-347a-28 (1-18)

QY 1714 GGAGCAATGCTGTTTGGCTGCAGCATAGGATTAATTCATTC 1767
Db 1 GlyGluserileLeuTyrPheGlyCyeharGlysaRgsarGlnMetAspPheIleTyr 18

RESULT 27
US-09-371-347a-61
; Sequence 61, Application US/09371347a
; GENERAL INFORMATION:
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347a
; CURRENT FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622

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; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 61
; LENGTH: 9
; TYPE: PRT
; ORGANISM: Homo sapiens
US-09-371-347a-61

Alignment Scores:
Pred. No.: 721 Length: 9
Score: 51.00 Matches: 9
Percent Similarity: 100.00% Conservative: 0
Best Local Similarity: 100.00% Mismatches: 0
Query Match: 1.35% Indels: 0
DB: 1 Gaps: 0

us-09-371-347a-1 (1-2097) x US-09-371-347a-61 (1-9)

QY 2068 AAAGCTACCTTGAGATATTGGTCA 2094
Db 1 LysaRgTyreugInaSpIleTyrSer 9

RESULT 28
US-09-371-347a-36
; Sequence 36, Application US/09371347a
; GENERAL INFORMATION:
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347a
; CURRENT FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 36
; LENGTH: 18
; TYPE: PRT
; ORGANISM: Escherichia coli
US-09-371-347a-36

Alignment Scores:
Pred. No.: 110 Length: 18
Score: 51.00 Matches: 9
Percent Similarity: 61.11% Conservative: 2
Best Local Similarity: 50.00% Mismatches: 7
Query Match: 1.35% Indels: 0
DB: 1 Gaps: 0

us-09-371-347a-1 (1-2097) x US-09-371-347a-36 (1-18)

QY 1714 GGAGCAATGCTGTTTGGCTGCAGCATAGGATTAATTCATTC 1767
Db 1 GlyLysaenTirPdeuPheGlyAsnProHisPheThrGlnaSpPheIleTyr 18

RESULT 29
US-09-371-347a-37
; Sequence 37, Application US/09371347a
; GENERAL INFORMATION:
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David

```

;; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE;
;; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
;; FILE REFERENCE: 50004/003003
;; CURRENT APPLICATION NUMBER: US/09/371,347A
;; PRIOR FILING DATE: 1999-08-10
;; PRIOR APPLICATION NUMBER: 09/232,028
;; PRIOR FILING DATE: 1999-01-15
;; PRIOR APPLICATION NUMBER: 60/071,622
;; NUMBER OF SEQ ID NOS: 61
;; SOFTWARE: FastSeq for Windows Version 4.0
;; SEQ ID NO 37
;; LENGTH: 18
;; TYPE: PRT
;; ORGANISM: Saccharomyces cerevisiae
US-09-371-347A-37

Alignment Scores:
Pred. No.: 110 Length: 18
Score: 51.00 Matches: 8
Percent Similarity: 72.22% Conservative: 5
Best Local Similarity: 44.44% Mismatches: 5
Query Match: 1.35% Indels: 0
DB: 1 Gaps: 0

us-09-371-347a-1 (1-2097) x US-09-371-347A-37 (1-18)

QY 1714 GGAGCATGCTGTTGTTTGGCTGCGAGCATAGATGAGTATCTATTC 1767
Db 1 GlytluvalPheleuYrLeuGlySerArgHisLysatrgluGluYrLeuYr 18

RESULT 30
US-09-371-347A-48
;; Sequence 48, Application US/09371347A
;; GENERAL INFORMATION:
;; APPLICANT: Gravel, Roy A,
;; APPLICANT: Rozen, Rima
;; APPLICANT: Leclerc, Daniel
;; APPLICANT: Wilson, Aaron
;; APPLICANT: Rosenblatt, David
;; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE;
;; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
;; FILE REFERENCE: 50004/003003
;; CURRENT APPLICATION NUMBER: US/09/371,347A
;; PRIOR FILING DATE: 1999-08-10
;; PRIOR APPLICATION NUMBER: 09/232,028
;; PRIOR FILING DATE: 1999-01-15
;; PRIOR APPLICATION NUMBER: 60/071,622
;; PRIOR FILING DATE: 1998-01-16
;; NUMBER OF SEQ ID NOS: 61
;; SOFTWARE: FastSeq for Windows Version 4.0
;; SEQ ID NO 48
;; LENGTH: 689
;; TYPE: PRT
;; ORGANISM: Homo sapiens
US-09-371-347A-48

Alignment Scores:
Pred. No.: 4.21 Length: 689
Score: 50.00 Matches: 23
Percent Similarity: 39.33% Conservative: 12
Best Local Similarity: 25.84% Mismatches: 38
Query Match: 1.34% Indels: 17
DB: 1 Gaps: 2

us-09-371-347a-1 (1-2097) x US-09-371-347A-48 (1-689)

QY 1894 GAAGCTGATGTTGCTTGTACATACCTTGCTGGGCTTCCTCCCAAGAGCAT 1835
Db 418 AspAlaCysAlaCysLeuLeuAspLeuLeuAlaPheProSerCysGlnProLeu 437

QY 1834 CTCTTGAGGAAGAACTTATGATGATTAAGATCCATGCTTAGGAATATGTCGACT 1775
Db 438 SerLeuLeuLeuGlnHisLeuProLysLeuGln----- 448
QY 1774 CTCTTGAGATAGATATATCCCTATCTTATGCTGAGCAAAAACAACCA--CATTCG 1717
Db 449 -----ProArgProLysSerCysAlaSerSerLeuPheHisPro 462
QY 1716 TCCAAAATTTCCATCGGTGGTGTCTTGAGATTCTCTCT--ATGTTGAGAAACC 1660
Db 463 GlyLysLeuHisPheValPheAsnIleValGluPheLeuSerThrAlaThrGluVal 482
QY 1659 AATAACGGGGCTATGCCGCTTCCTGG 1633
Db 483 LeuArgLysGlyValCysThrGlyTyr 491

RESULT 31
US-09-371-347A-46
;; Sequence 46, Application US/09371347A
;; GENERAL INFORMATION:
;; APPLICANT: Gravel, Roy A,
;; APPLICANT: Rozen, Rima
;; APPLICANT: Leclerc, Daniel
;; APPLICANT: Wilson, Aaron
;; APPLICANT: Rosenblatt, David
;; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE;
;; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
;; FILE REFERENCE: 50004/003003
;; CURRENT APPLICATION NUMBER: US/09/371,347A
;; PRIOR FILING DATE: 1999-08-10
;; PRIOR APPLICATION NUMBER: 09/232,028
;; PRIOR FILING DATE: 1999-01-15
;; PRIOR APPLICATION NUMBER: 60/071,622
;; PRIOR FILING DATE: 1998-01-16
;; NUMBER OF SEQ ID NOS: 61
;; SOFTWARE: FastSeq for Windows Version 4.0
;; SEQ ID NO 46
;; LENGTH: 697
;; TYPE: PRT
;; ORGANISM: Homo sapiens
US-09-371-347A-46
Alignment Scores:
Pred. No.: 4.17 Length: 697
Score: 50.00 Matches: 23
Percent Similarity: 39.33% Conservative: 12
Best Local Similarity: 25.84% Mismatches: 38
Query Match: 1.34% Indels: 17
DB: 1 Gaps: 2

us-09-371-347a-1 (1-2097) x US-09-371-347A-46 (1-697)

QY 1894 GAAGCTGATGTTGCTTGTACATACCTTGCTGGGCTTCCTCCCAAGAGCAT 1835
Db 419 AspAlaCysAlaCysLeuLeuAspLeuLeuAlaPheProSerCysGlnProLeu 438
QY 1834 CTCTTGAGGAAGAACTTATGATGATTAAGATCCATGCTTAGGAATATGTCGACT 1775
Db 439 SerLeuLeuLeuGlnHisLeuProLysLeuGln----- 449
QY 1774 CTCTTGATAGATATATCCCTATCTTATGCTGAGCAAAAACAACCA--CATTCG 1717
Db 450 -----ProArgProLysSerCysAlaSerSerLeuPheHisPro 463
QY 1716 TCCAAAATTTCCATCGGTGGTGTCTTGAGATTCTCTCT--ATGTTGAGAAACC 1660
Db 464 GlyLysLeuHisPheValPheAsnIleValGluPheLeuSerThrAlaThrGluVal 483
QY 1659 AATAACGGGGCTATGCCGCTTCCTGG 1633
Db 484 LeuArgLysGlyValCysThrGlyTyr 492

```
RESULT 32
US-09-371-347A-2
; Sequence 2, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A,
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; PRIOR FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 2
; LENGTH: 698
; TYPE: PRT
; ORGANISM: Homo sapiens
US-09-371-347A-2

Alignment Scores:
Pred. No.: 4.16 Length: 698
Score: 50.00 Matches: 23
Percent Similarity: 39.33% Conservative: 12
Best Local Similarity: 25.84% Mismatches: 38
Query Match: 1.34% Indels: 17
DB: 1 Gaps: 2

us-09-371-347A-1 (1-2097) x US-09-371-347A-2 (1-698)
QY 1894 GAACGTGATGTTCTTGTACATACCTTTGCTGGGGCTTCTCTCTCCCAACAGAGCAT 1835
Db :|||:|||||:|||||:|||||:|||||:|||||:|||||:|||||:|||||:|||||:
QY 419 Aspalacysalacysleuleuaspheuleu1a1ahepProserCysGlnProleu 438
Db :|||:|||||:|||||:|||||:|||||:|||||:|||||:|||||:|||||:
QY 1834 CTCTTGAGAGGAACCTTTAGATGAGTTAATCCATCCATGCTTAAGAAATGCTGAGCT 1775
Db :|||:|||||:|||||:|||||:|||||:|||||:|||||:|||||:|||||:
QY 439 SerleuleuleuGlnHlsleuProlysleuIn----- 449
Db :|||:|||||:|||||:|||||:|||||:|||||:|||||:|||||:|||||:
QY 1774 CTTTTGAATAGATTAATCTCTATTCCTTATGCTGACGCCAACAACA--CATTCG 1717
Db :|||:|||||:|||||:|||||:|||||:|||||:|||||:|||||:|||||:
QY 450 -----ProArgProtyrSerCysAlaSerSerSerleuPheHisPro 463
Db :|||:|||||:|||||:|||||:|||||:|||||:|||||:|||||:|||||:
QY 1716 TCCAAATTTCCATCTGGGCTTGTCTTGAGATTCTCTCT---ATGTTGAGAAACC 1660
Db :|||:|||||:|||||:|||||:|||||:|||||:|||||:|||||:|||||:
QY 464 GlylysleuHispheValPheAsn11eValGlnPheleuSerThrAlaThrThrgluVal 483
Db :|||:|||||:|||||:|||||:|||||:|||||:|||||:|||||:|||||:
QY 1659 AATAACGGGGCTATGCGCGTTCCTGG 1633
Db :|||:|||||:|||||:|||||:|||||:|||||:|||||:|||||:|||||:
QY 484 LeuArglysglyValCysThrGlyTyr 492
Db :|||:|||||:|||||:|||||:|||||:|||||:|||||:|||||:|||||:

RESULT 33
US-09-371-347A-21
; Sequence 21, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A,
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; CURRENT FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
```

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; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 21
; LENGTH: 698
; TYPE: PRT
; ORGANISM: Homo sapiens
US-09-371-347A-21

Alignment Scores:
Pred. No.: 4.16 Length: 698
Score: 50.00 Matches: 23
Percent Similarity: 39.33% Conservative: 12
Best Local Similarity: 25.84% Mismatches: 38
Query Match: 1.34% Indels: 17
DB: 1 Gaps: 2

us-09-371-347A-1 (1-2097) x US-09-371-347A-21 (1-698)
QY 1894 GAACGTGATGTTCTTGTACATACCTTTGCTGGGGCTTCTCTCTCCCAACAGAGCAT 1835
Db :|||:|||||:|||||:|||||:|||||:|||||:|||||:|||||:|||||:
QY 419 Aspalacysalacysleuleuaspheuleu1a1ahepProserCysGlnProleu 438
Db :|||:|||||:|||||:|||||:|||||:|||||:|||||:|||||:|||||:
QY 1834 CTCTTGAGAGGAACCTTTAGATGAGTTAATCCATCCATGCTTAAGAAATGCTGAGCT 1775
Db :|||:|||||:|||||:|||||:|||||:|||||:|||||:|||||:|||||:
QY 439 SerleuleuleuGlnHlsleuProlysleuIn----- 449
Db :|||:|||||:|||||:|||||:|||||:|||||:|||||:|||||:|||||:
QY 1774 CTTTTGAATAGATTAATCCCTATTCCTTATGCTGACGCCAACAACA--CATTCG 1717
Db :|||:|||||:|||||:|||||:|||||:|||||:|||||:|||||:|||||:
QY 450 -----ProArgProtyrSerCysAlaSerSerSerleuPheHisPro 463
Db :|||:|||||:|||||:|||||:|||||:|||||:|||||:|||||:|||||:
QY 1716 TCCAAATTTCCATCTGGGCTTGTCTTGAGATTCTCTCT---ATGTTGAGAAACC 1660
Db :|||:|||||:|||||:|||||:|||||:|||||:|||||:|||||:|||||:
QY 464 GlylysleuHispheValPheAsn11eValGlnPheleuSerThrAlaThrThrgluVal 483
Db :|||:|||||:|||||:|||||:|||||:|||||:|||||:|||||:|||||:
QY 1659 AATAACGGGGCTATGCGCGTTCCTGG 1633
Db :|||:|||||:|||||:|||||:|||||:|||||:|||||:|||||:|||||:
QY 484 LeuArglysglyValCysThrGlyTyr 492
Db :|||:|||||:|||||:|||||:|||||:|||||:|||||:|||||:|||||:

RESULT 34
US-09-371-347A-42
; Sequence 42, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A,
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; CURRENT FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 42
; LENGTH: 698
; TYPE: PRT
; ORGANISM: Homo sapiens
US-09-371-347A-42

Alignment Scores:
Pred. No.: 4.16 Length: 698
Score: 50.00 Matches: 23
Percent Similarity: 39.33% Conservative: 12
Best Local Similarity: 25.84% Mismatches: 38
```

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Query Match: 1.34% Indels: 17
DB: 1 Gaps: 2
us-09-371-347a-1 (1-2097) x US-09-371-347a-42 (1-698)

QY 1894 GAAGCTGATGTTGTTCTGTACATCTTGGTGGGGCTTCCTCCCAAGAGCAT 1835
   ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| |||
Db 419 AsplacysalacysleuLeuAspleuLeuAlaPheProSerCysGlnProleu 438
   ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| |||
QY 1834 CTCTTGAGAGAAACCTTTAGATGATTAAGATCCCATGCTTAAGAAATGCTGAGCT 1775
   ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| |||
Db 439 SerleuLeuLeuGluHisleuProlyseuGln----- 449
   ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| |||
QY 1774 CTCTTGATAGATATATCCCTATCCCTATGCTGAGCCCAAAACACCA--CATTC 1717
   ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| |||
Db 450 -----ProArgProlyserCysAlaSerSerleuPheHisPro 463
   ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| |||
QY 1716 TCCAAATTTCCATCTGGGTGTTGTTGAGATTCTCTCT--ATGTTGAGAAACC 1660
   ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| |||
Db 464 GlyIysleuHisPheValPheAsnIleValGluPheLeuSerThrAlaThrGluVal 483
   ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| |||
QY 1659 AATAACGGGCTATGCCGTTCTCTGG 1633
   ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| |||
Db 484 LeuArgIysGlyValCysThrGlyTyr 492
   ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| |||

RESULT 35
US-09-371-347a-44
; Sequence 44, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A,
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; PRIOR FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; SOFTWARE: FastSeq for Windows Version 4.0
; NUMBER OF SEQ ID NOS: 61
; SEQ ID NO 44
; LENGTH: 698
; TYPE: PRT
; ORGANISM: Homo sapiens
US-09-371-347a-44

Alignment Scores:
Pred. No.: 4.16 Length: 698
Score: 50.00 Matches: 23
Percent Similarity: 39.33% Conservative: 12
Best Local Similarity: 25.84% Mismatches: 38
Query Match: 1.34% Indels: 17
Gaps: 2
us-09-371-347a-1 (1-2097) x US-09-371-347a-44 (1-698)

QY 1894 GAAGCTGATGTTGTTCTGTACATCTTGGTGGGGCTTCCTCCCAAGAGCAT 1835
   ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| |||
Db 419 AsplacysalacysleuLeuAspleuLeuAlaPheProSerCysGlnProleu 438
   ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| |||
QY 1834 CTCTTGAGAGAAACCTTTAGATGATTAAGATCCCATGCTTAAGAAATGCTGAGCT 1775
   ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| |||
Db 439 SerleuLeuLeuGluHisleuProlyseuGln----- 449
   ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| |||
QY 1774 CTCTTGATAGATATATCCCTATCCCTATGCTGAGCCCAAAACACCA--CATTC 1717
   ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| |||
Db 450 -----ProArgProlyserCysAlaSerSerleuPheHisPro 463
   ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| |||

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QY 1716 TCCAAATTTCCATCTGGGTGTTGTTGAGATTCTCTCT--ATGTTGAGAAACC 1660
   ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| |||
Db 464 GlyIysleuHisPheValPheAsnIleValGluPheLeuSerThrAlaThrGluVal 483
   ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| |||
QY 1659 AATAACGGGCTATGCCGTTCTCTGG 1633
   ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| |||
Db 484 LeuArgIysGlyValCysThrGlyTyr 492
   ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| |||

RESULT 36
US-09-371-347a-27
; Sequence 27, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A,
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; PRIOR FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; SOFTWARE: FastSeq for Windows Version 4.0
; NUMBER OF SEQ ID NOS: 61
; SEQ ID NO 27
; LENGTH: 18
; TYPE: PRT
; ORGANISM: Oryctolagus cuniculus
US-09-371-347a-27

Alignment Scores:
Pred. No.: 118 Length: 18
Score: 49.00 Matches: 8
Percent Similarity: 61.11% Conservative: 3
Best Local Similarity: 44.44% Mismatches: 7
Query Match: 1.30% Indels: 0
Gaps: 0
us-09-371-347a-1 (1-2097) x US-09-371-347a-27 (1-18)

QY 1714 GAAGCAATGTTGTTGTTGCTGCGAGCATAGATAGGATTAATCTATTC 1767
   ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| |||
Db 1 GlyIuThrleuLeuTyrrTyGlyCysArgGalaIaGluAspTyrrleuTyr 18
   ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| |||

RESULT 37
US-09-371-347a-23
; Sequence 23, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A,
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; PRIOR FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; SOFTWARE: FastSeq for Windows Version 4.0
; NUMBER OF SEQ ID NOS: 61
; SEQ ID NO 23
; LENGTH: 677

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: TYPE: PRT
: ORGANISM: Homo sapiens
US-09-371-347A-23

Alignment Scores:
Pred. No.: 4.41 Length: 677
Score: 49.00 Matches: 20
Percent Similarity: 45.12% Conservative: 17
Best Local Similarity: 24.39% Mismatches: 27
Query Match: 1.31% Indels: 18
DB: 1 Gaps: 4

US-09-371-347A-1 (1-2097) x US-09-371-347A-23 (1-677)

QY 695 ACCGACCGGTAAAGTGAAGACTCAAGTCTTCATTACACATTGATGTGCTGTTG 636
    ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| |||
Db 13 SerGuaValAlaIaGlU---ValSerLeuPheSerMetThrAspMetLeuPhe 31

QY 635 ACTGCA-----TTTCTCTCAAAACCTCAAGATCCTTCTT 600
    ::| ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| |||
Db 32 SerLeuIleValGlyLeuLeuThrTyrTrpPheLeuPheArgLysLysLeuIleVal 51

QY 599 CCTGAATCATGAACTCGAAGAGTCGATTCGATTCATGATGTGAGACGCTGCTTC 540
    ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| |||
Db 52 ProGluPheMetLysIleGlnThrLeuThr-----SerSerValArgGluSerIlePhe 69

QY 539 ACA-----AGCTCTGTCCTCAAGATGACGATGATGCCACCGG 501
    ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| |||
Db 70 ValGluLysMetLysLysThrGlyArgGlnIleIleValPheTyrGlySerGlnThrGly 89

QY 500 AGTGGC 495
    ::| |||
Db 90 ThrAla 91

RESULT 38
US-09-371-347A-33
: Sequence 33, Application US/09371347A
: GENERAL INFORMATION:
: APPLICANT: Gravel, Roy A,
: APPLICANT: Rozen, Rima
: APPLICANT: Leclerc, Daniel
: APPLICANT: Wilson, Aaron
: APPLICANT: Rosenblatt, David
: TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE;
: TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
: FILE REFERENCE: 50004/003003
: CURRENT APPLICATION NUMBER: US/09/371,347A
: CURRENT FILING DATE: 1999-08-10
: PRIOR APPLICATION NUMBER: 09/232,028
: PRIOR FILING DATE: 1999-01-15
: PRIOR APPLICATION NUMBER: 60/071,622
: PRIOR FILING DATE: 1998-01-16
: NUMBER OF SEQ ID NOS: 61
: SOFTWARE: FastSeq for Windows Version 4.0
: SEQ ID NO 33
: LENGTH: 18
: TYPE: PRT
: ORGANISM: Homo sapiens
US-09-371-347A-33

Alignment Scores:
Pred. No.: 150 Length: 18
Score: 42.00 Matches: 8
Percent Similarity: 62.50% Conservative: 2
Best Local Similarity: 50.00% Mismatches: 6
Query Match: 1.11% Indels: 0
DB: 1 Gaps: 0

US-09-371-347A-1 (1-2097) x US-09-371-347A-33 (1-18)

QY 1720 ATGCGCTGTTTGGCTGACGACATAGGATATGATATTC 1767
    ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| |||

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Db          3 MethtreulvalPhegLYCyArGcYseGclnleuasphtsleuTYr 18

RESULT 39
US-09-371-347a-31
; Sequence 31, Application US/09371347a
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A,
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; TITLE OF INVENTION: DEFECTS, CARDIOVASCULAR DISEASE, AND CANCER
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347a
; PRIOR FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 31
; LENGTH: 18
; TYPE: PRT
; ORGANISM: Homo sapiens
US-09-371-347a-31

Alignment Scores:
Pred. No.:      160      Length:      18
Score:          40.00    Matches:      7
Percent Similarity: 62.50%  Conservative: 3
Best Local Similarity: 43.75%  Mismatches: 6
Query Match:    1.06%      Indels:      0
DB:             1         Gaps:          0

us-09-371-347a-1 (1-2097) x US-09-371-347a-31 (1-18)
OY          1720 ATGNGTGTGTTTGGCTGCAGGCATAGGATGAGTATCTATTC 1767
Db          3 MetvalleulvalPhegLYCyArGclnserLYslleasphslietYr 18

RESULT 40
US-09-371-347a-55
; Sequence 55, Application US/09371347a
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A,
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; TITLE OF INVENTION: DEFECTS, CARDIOVASCULAR DISEASE, AND CANCER
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347a
; PRIOR FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 55
; LENGTH: 19
; TYPE: PRT
; ORGANISM: Homo sapiens
US-09-371-347a-55

Alignment Scores:
Pred. No.:      180      Length:      19
Score:          34.50    Matches:      7

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Percent Similarity: 50.00% Conservative: 3
Best Local Similarity: 35.00% Mismatches: 5
Query Match: 0.92% Indels: 5
DB: 1 Gaps: 1

us-09-371-347a-1 (1-2097) x US-09-371-347a-55 (1-19)

OY 1756 CCTATCCTTATGCTGAGCGCAAAAACACACATGCTCAAAATTCATCTGCGT 1697
Db 3 ProargProlyserCySalserSerseu-----PheHisProGly 17

RESULT 41
US-09-371-347a-39
; Sequence 39, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A.
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; FILE REFERENCE: 50004/003003
; CURRENT FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 39
; LENGTH: 19
; TYPE: PRT
; ORGANISM: Pisum sativum
US-09-371-347a-39

Alignment Scores:
Pred. No.: 182 Length: 19
Score: 34.00 Matches: 6
Percent Similarity: 53.85% Conservative: 1
Best Local Similarity: 46.15% Mismatches: 6
Query Match: 0.90% Indels: 0
DB: 1 Gaps: 0

us-09-371-347a-1 (1-2097) x US-09-371-347a-39 (1-19)

OY 1714 GGAGCAATGCTGTTTGGCTGACGCAATAGAT 1752
Db 1 GlyLeuAlaTrpLeuPheLeuGlyValAlaAsnValasp 13

RESULT 42
US-09-371-347a-40
; Sequence 40, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A.
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; FILE REFERENCE: 50004/003003
; CURRENT FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
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```
; SEQ ID NO 40
; LENGTH: 18
; TYPE: PRT
; ORGANISM: Spinacia oleracea
US-09-371-347a-40

Alignment Scores:
Pred. No.: 208 Length: 18
Score: 31.00 Matches: 5
Percent Similarity: 62.50% Conservative: 0
Best Local Similarity: 62.50% Mismatches: 3
Query Match: 0.82% Indels: 0
DB: 1 Gaps: 0

us-09-371-347a-1 (1-2097) x US-09-371-347a-40 (1-18)

OY 1714 GGAGCAATGCTGTTTGGCTGACGCAATAGAT 1737
Db 1 GlyLeuAlaTrpLeuPheLeuGly 8

RESULT 43
US-09-371-347a-36
; Sequence 36, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A.
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; FILE REFERENCE: 50004/003003
; CURRENT FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 36
; LENGTH: 18
; TYPE: PRT
; ORGANISM: Escherichia coli
US-09-371-347a-36

Alignment Scores:
Pred. No.: 214 Length: 18
Score: 30.00 Matches: 4
Percent Similarity: 85.71% Conservative: 2
Best Local Similarity: 57.14% Mismatches: 1
Query Match: 0.80% Indels: 0
DB: 1 Gaps: 0

us-09-371-347a-1 (1-2097) x US-09-371-347a-36 (1-18)

OY 1967 ATATCTTGACATCTCCACAC 1947
Db 5 LeuPhePheGlyAsnProHis 11

RESULT 44
US-09-371-347a-59
; Sequence 59, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A.
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE:
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; FILE REFERENCE: 50004/003003
; CURRENT FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
```

```

; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; CURRENT FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 59
; LENGTH: 6
; TYPE: PRT
; ORGANISM: Homo sapiens
US-09-371-347A-59

```

```

Alignment Scores:
Pred. No.: 1.08e+03      Length: 6
Score: 29.00             Matches: 6
Percent Similarity: 100.00% Conservative: 0
Best Local Similarity: 100.00% Mismatches: 0
Query Match: 0.77%       Indels: 0
DB: 1                     Gaps: 0

```

us-09-371-347a-1 (1-2097) x US-09-371-347A-59 (1-6)

```

OY      1822 TCCTTCACAGATGCT 1839
Db      1 Serpenseatgaepala 6

```

```

RESULT 45
US-09-371-347A-58
; Sequence 58, Application US/09371347A
; GENERAL INFORMATION:
; APPLICANT: Gravel, Roy A.,
; APPLICANT: Rozen, Rima
; APPLICANT: Leclerc, Daniel
; APPLICANT: Wilson, Aaron
; APPLICANT: Rosenblatt, David
; TITLE OF INVENTION: HUMAN METHIONINE SYNTHASE REDUCTASE;
; TITLE OF INVENTION: CLONING, AND METHODS FOR EVALUATING RISK OF NEURAL TUBE
; FILE REFERENCE: 50004/003003
; CURRENT APPLICATION NUMBER: US/09/371,347A
; CURRENT FILING DATE: 1999-08-10
; PRIOR APPLICATION NUMBER: 09/232,028
; PRIOR FILING DATE: 1999-01-15
; PRIOR APPLICATION NUMBER: 60/071,622
; PRIOR FILING DATE: 1998-01-16
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 58
; LENGTH: 22
; TYPE: PRT
; ORGANISM: Homo sapiens
US-09-371-347A-58

```

```

Alignment Scores:
Pred. No.: 182           Length: 22
Score: 29.00             Matches: 6
Percent Similarity: 60.00% Conservative: 0
Best Local Similarity: 60.00% Mismatches: 4
Query Match: 0.78%       Indels: 0
DB: 1                     Gaps: 0

```

us-09-371-347a-1 (1-2097) x US-09-371-347A-58 (1-22)

```

OY      515 GGTATGACACCGGAGTGGCCACTTATC 486
Db      7 GlyProGlyThrGlyIleAlaProPheIle 16

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Search completed: May 9, 2005, 15:29:31
Job time : 27 secs

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